

apcmag.com **APPLE'S SWEET NEW iBOOK**

PROUDLY AUSTRALIAN

NZ\$9.95 inc GST

\$9.80 inc GST

Australian Personal Computer

JULY 2001

AUSTRALIA'S LEADING TECHNOLOGY MAGAZINE

PLUG IN

to the FAST LANE



FIREWIRE AND USB2
Put to the test

ONLINE DESIGN TRENDS
Is your Web site
wired or tired?



07



9 313006 001362

IF YOUR COVER CD IS MISSING, PLEASE ENQUIRE AT PLACE OF PURCHASE

Australian Personal Computer

VOL.22 NO.7 JULY 2001

PLUG INTO THE FAST LANE

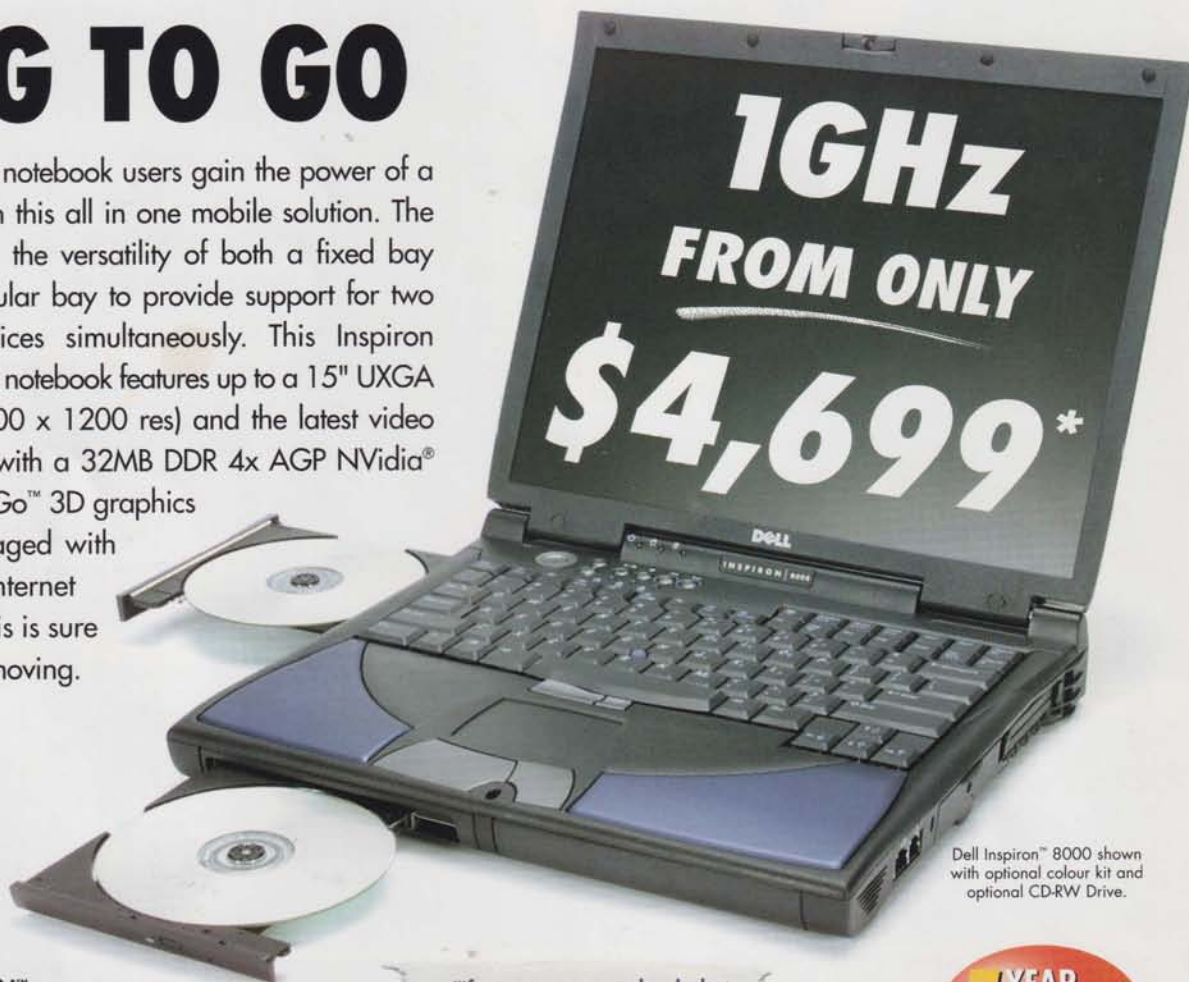
ISSN - 0725-4415 Print Post Approved PP255003003559

WORKSHOP REVIEWS NEWS OPINION CORPORATE IT AFTER HOURS

GIVE YOURSELF THE POWER

GIG TO GO

Demanding notebook users gain the power of a desktop with this all in one mobile solution. The 8000 offers the versatility of both a fixed bay and a modular bay to provide support for two optical devices simultaneously. This Inspiron 8000 1GHz notebook features up to a 15" UXGA display (1600 x 1200 res) and the latest video technology with a 32MB DDR 4x AGP NVidia® GeForce 2 Go™ 3D graphics card. Packaged with one year internet access⁶ – this is sure to get you moving.



Dell Inspiron™ 8000 shown with optional colour kit and optional CD-RW Drive.

DELL INSPIRON™ 8000 G1000VT NOTEBOOK

- Mobile Intel® Pentium® III Processor 1GHz
- 128MB SDRAM
- 32MB DDR 4X AGP NVIDIA® GeForce2 Go™ 3D Video
- 15" SUPER XGA+ TFT Display (1400x1050 res)
- 20GB¹ HDD
- 8X Max DVD-ROM
- Internal Mini-PCI 56K Capable Modem Fax
- Microsoft® Windows® Millenium Edition
- Microsoft® OEM Works Suite 2001
- Case
- 1 Year Limited Warranty (1 Year Next Business Day On-Site² Service and 1 Year Parts)

"If you want a notebook that works as hard as you do, don't buy anything until you've seen the Inspiron 8000"

Australian PC User, June 2001.



Offer valid on all Inspiron™ products.

**SAVE
\$200³**

Valid till June 29, 2001

NOW \$4,699*

PRICE INCLUDES GST AND SAVINGS. DELIVERY ADDITIONAL



Please Quote when ordering

E-VALUE CODE B540623-470206

\$39.95⁴
PER WEEK

Lease prices for business customers for business use only



www.dell.com.au

BUILD YOUR OWN AND ORDER ONLINE 24HRS/DAY

Dell recommends Windows® 2000 Professional for business.

Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation. DELD5107/APC/FRONT

DO BUSINESS WITH THE WORLD'S NUMBER 1



Dell Dimension™ 8100 series. Pictured with optional 19" Trinitron Flat Display monitor

atomic
MULTIMEDIA POWER DIMENSION™

**"the latest in CPU, motherboard
and RAM architecture"**

Atomic 2000 Issue One
Dell Dimension™ 8100



Offer valid on
all Dimension™
products.

DELL DIMENSION™ 8100 DESKTOP

- Intel® Pentium® 4 Processor 1.3GHz
- 128MB RDRAM
- 32MB NVIDIA® GeForce2 MX AGP Graphics Card
- 15" Colour Monitor (13.8" v.i.s.)
- 10GB¹ HDD
- 48X Max CD-ROM
- Microsoft® Windows® Millennium Edition
- Microsoft® OEM Works Suite 2001
- Norton Anti-Virus 2001 – OEM
- 1 Year Limited Warranty (1 Year Second Business Day On-Site² Service and 1 Year Parts)

► Add: Home pack; Sound Blaster Live! Value 576 Voice sound card, PC Stereo speakers and 56k modem \$299*

**SAVE
\$200³**

Valid till June 29, 2001

NOW \$1,999*

PRICE INCLUDES GST AND SAVINGS. DELIVERY ADDITIONAL

\$17.10
PER WEEK

Lease prices for business
customers for business use only



Please Quote when ordering

E-VALUE CODE B240610 - 470206

WE'VE JUST MADE THE INTEL® PENTIUM® 4 PROCESSOR GO FASTER

Dell recently became the world's #1 PC company⁷. We decided to celebrate with more fantastic deals for our customers. This includes the next generation Dell Dimension™ 8100 desktop. It features the Intel® Pentium® 4 processor at 1.3GHz and powerful dual channel RDRAM. This best of breed, yet affordable powerhouse is designed for serious multitasking and high productivity. And priced from only \$1999* including 1 year internet access⁶, they're set to go even quicker!

1300 303 107

CALL DELL NOW MON TO FRI 8AM-8PM (EST)

Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation. DELD5107/APC/RH



POWER UP WITH DELL™ POWEREDGE™ SC SERVERS

NEW



PowerEdge™ 300SC

Dell™ PowerEdge™ SC servers stand alone and deliver key features crucial to today's value-centric small businesses and remote facilities. Designed with utility, ease of set-up, and versatility in mind, the PowerEdge™ SC series help enable organisations to realistically scale their computing needs in accordance with their

business needs - all without breaking the bank.

Driven by popular features, such as internal expandability, ease of use, and serviceability, PowerEdge™ SC Servers save your business valuable time and money. All PowerEdge™ SC Servers are powered by Intel® Pentium® III processors and are backed by Dell's award-winning service and support.



PowerEdge™ 2500SC

The new PowerEdge™ 2500SC is designed for businesses with demanding workloads that require high system availability.

The feature rich 2500SC incorporates many of the same uptime and redundancy features found in our enterprise servers. This includes high storage capacity, expansion capabilities as well as hot-swap hard drives.



POWEREDGE™ 2500 SC SERVER

- Intel® Pentium® III Processor 933MHz
- 128MB (2x64) SDRAM with ECC
- 9GB 10K Ultra 160 SCSI Hard Drive
- Integrated Intel® Pro 100+ NIC
- 15" Colour Monitor (13.8" v.i.s.)
- 24X MAX EIDE CD-ROM
- Integrated Dual Ultra3 (Ultra160) SCSI Adaptec AIC-7899
- 3 Year Limited Warranty (1 Year Next business day on-site* service)

\$4,599*

VALID TILL JUNE 29, 2001. PRICE INCLUDES GST. DELIVERY ADDITIONAL

\$39.25²
PER WEEK

Lease prices for business customers for business use only



Please Quote when ordering
E-VALUE CODE B420625 - 470206



**DELL™ VOTED #1
FOR SERVICE AND RELIABILITY⁴**
Australian Personal Computer Reader's Survey 1999, 2000

Dell recommends Windows® 2000 Professional for Business

*DELL'S NORMAL TERMS AND CONDITIONS APPLY AND ARE AVAILABLE ONLINE OR ON REQUEST. Pricing, specifications and availability subject to change without notice. Prices shown are inclusive of GST. Delivery charges are additional. Dimension, Inspiron, Poweredge, Precision and Evalue are trademarks of the Dell Computer Corporation. Other trademarks and trade names may be used in this document to refer to either the entities claiming marks and names or their products. Dell disclaims any liability for businesses provided by an independent third party and is subject to approval and availability. Above rates are based on a 36 month financing term. Lease rates are current at the time of publication and are inclusive of GST and stamp duty. Actual accessible capacity varies with operating environment. *On-site service provided by independent third-party service provider and may not be available in certain remote locations. Technician shall be dispatched if necessary following telephone technical support. *\$39.25 per week, with subsequent hours charged at \$3.95 per hour. Valid with all Dimension and Inspiron purchases after May 20. Modem required for internet access. ⁴Source: IDC PC Tracker Q1 2001, Top 5 WW/US (Preliminary) April 2001. Intel, the Intel

LATEST TECHNOLOGY, LOW PRICES



DIMENSION™ DESKTOPS

	Processor	Memory	Graphics	Monitor/ Screen Size	Hard Drive	Sound Card	Additional Features	Optical Drive	Feature Upgrade	E-Value Code	Business Lease Price**/Week	Price Valid to 29/6/01
Dell Dimension™ 8100 Desktop	Intel® Pentium® 4 Processor 1.7 GHz	128MB RDRAM	32MB NVIDIA GeForce2 MX	17" Colour (15.9" v.i.s.)	40GB¹	SoundBlaster Live! Value 576Voice	PC Stereo Speakers & 56K modem	48X Max CD-ROM	Upgrade to: 256MB RDRAM S476* Upgrade to: 17" Trinitron monitor (16" v.i.s.) S346*	B240615-470206	\$25.65	\$2,999*
Dell Dimension™ 4100 Desktop	Intel® Pentium® III Processor 866MHz	64MB 133MHz SDRAM	16MB ATI RAGE 128Pro 4x AGP Graphics Card	15" Colour (13.8" v.i.s.)	20GB¹	Creative Labs SoundBlaster 64 Voice PCI		48X Max CD-ROM	Upgrade to: 256MB SDRAM S606* Upgrade to: 17" Trinitron monitor (16" v.i.s.) S563*	B240608Z-470206	\$14.55	\$1,699*
Dell Dimension™ L Desktop	Intel® Pentium® III Processor 933 MHz	128MB PC100 SDRAM	Intel® 3D Direct AGP	15" Colour (13.8" v.i.s.)	20GB¹	Creative Labs SoundBlaster 64 Voice PCI		48X Max CD-ROM	Upgrade to: 17" colour monitor (15.9" v.i.s.) S216* Upgrade to: 12X DVD-ROM Drive S119*	B240608-470206	\$14.55	\$1,699*
Dell Dimension™ L Desktop	Intel® Celeron® Processor 700 MHz	64MB PC100 SDRAM	Intel® 3D Direct AGP	15" Colour (13.8" v.i.s.)	20GB¹	Creative Labs SoundBlaster 64 Voice PCI		48X Max CD-ROM	Upgrade to: 17" colour monitor (15.9" v.i.s.) S216* Upgrade to: 128MB SDRAM S238*	B240606-470206	\$11.10	\$1,299*

All prices specified above include GST and savings where applicable. Delivery additional. All offers valid to June 29, 2001. Lease prices for business customers for business use only. These Dimension™ Desktops come with a 3.5" Floppy drive, keyboard, mouse, Norton Anti-Virus 2001 OEM, 1 Year Limited Warranty (Second business day on-site service), Microsoft® Work Suite OEM 2001.



INSPIRON™ NOTEBOOKS

	Processor	Memory	Graphics	Screen Size	Hard Drive	Optical Drive	Modem	Carry Case	Feature Upgrade	E-Value Code	Business Lease Price**/Week	Price Valid to 29/6/01
Dell Inspiron™ 8000 G850VT Notebook	Mobile Intel® Pentium® III Processor 850MHz	128MB SDRAM	16MB DDR 4X AGP NVIDIA® GeForce2 Go 3D Video	15" SXGA+ TFT Display (1400x1050)	5GB¹	24X Max CD-ROM	Internal Mini-PCI 56K Fax	Case	Upgrade to: 20GB HDD S649* Add: CD-RW Drive, 8x Write, 20x Read S768*	B540618Z-470206	\$31.40	\$3,699*
Dell Inspiron™ 4000 G700GT Notebook	Mobile Intel® Pentium® III Processor 700MHz with Intel® SpeedStep™ Technology	128MB SDRAM	8MB AGP 2X ATI RAGE MOBILITY 128M 3D Video	14.1" XGA TFT (1024x768)	5GB¹	24X Max CD-ROM		Case	Upgrade to: 20GB HDD S649* Upgrade to: CD-RW Drive, 8x Write, 20x Read S509*	B540615Z-470206	\$25.65	\$2,999*
Dell Inspiron™ 2500 C700ST Notebook	Intel® Celeron™ Processor 700MHz	64MB SDRAM	Intel® Integrated 3D AGP	12.1" SVGA TFT (800x600)	5.0GB¹	24X Max CD-ROM			Upgrade to: 10GB HDD S390* Upgrade to: 128MB SDRAM (128MB) S238*	B540613-470206	\$21.25	\$2,499*

All prices specified above include GST and savings where applicable. Delivery additional. All offers valid to June 29, 2001. Lease prices for business customers for business use only. These Inspiron™ Notebooks come with: 3.5" FDD, Microsoft® OEM Works Suite 2001, Microsoft® Windows® Millennium, 1 year Limited warranty (Next Business Day On-Site response).



POWEREDGE™ SERVERS

	Processor	Memory	Network Card	Hard Drive	Controller	Optical Drive	Feature Upgrade	E-Value Code	Business Lease Price**/Week	Price Valid to 29/6/01
Dell PowerEdge™ 4400 Server	Intel® Pentium® III Xeon™ Processor 933MHz	128MB (2x64) 133MHz SDRAM with ECC	Integrated Intel® Pro 100+ NIC	9GB¹ Ultra 160 SCSI	Integrated Dual Ultra3(U160) Ultra Narrow SCSI Controllers	40X Max SCSI CD-ROM	Add: 9GB¹ LVD SCSI HDD (10,000rpm) S541* Add: APC 1400VA UPS Backup Power Supply S1645*	B420631-470206	\$51.95	\$6,799*
Dell PowerEdge™ 1400SC Server	Intel® Pentium® III Processor 866MHz	128MB SDRAM with ECC	Integrated Intel® Pro 100+ NIC	9GB¹ Ultra 160 SCSI	Integrated Dual Ultra3(U160) SCSI Controller	48x Max EIDE CD-ROM	Add: 2nd Intel® Pentium® III Processor 866MHz S757* Add: APC 700VA UPS Backup Power Supply S822*	B420612-470206	\$22.15	\$2,599*
Dell PowerEdge™ 300SC Server	Intel® Pentium® III Processor 800MHz	64MB 100MHz SDRAM with ECC	Intel® Pro 100+ NIC	10GB¹ IDE	Integrated IDE Controller	48x Max EIDE CD-ROM	Add: 10GB¹ EIDE 7.2K HDD S216* Upgrade to: 256MB SDRAM with ECC (2 X128) S433*	B420609-470206	\$17.10	\$1,999*

Prices include GST. Delivery additional. All offers valid to June 29, 2001. Lease prices for business customers for business use only. These PowerEdge™ Servers come with: 3.5" 1.44MB Diskette Drive, a Dell Mouse, and a 3 year limited warranty (1 year next business day on Site Response).



PRECISION™ WORKSTATIONS

	Processor	Memory	Graphics Card	Monitor/ Screen Size	Hard Drive	Optical Drive	Special Offers	E-Value Code	Business Lease Price**/Week	Price Valid to 29/6/01
Dell Precision™ Workstation 530	Intel® Xeon™ Processor 1.5GHz/400fsb	256MB PC800 ECC RDRAM	32MB NVIDIA GeForce2 GTS	17" Colour (15.9" v.i.s.)	9GB¹ U160M SCSI Hard Drive 10,000RPM	48X Max Variable EIDE CD ROM	Free Upgrade to: Intel® Xeon™ Processor 1.7GHz	B620624-470206	\$45.00	\$4,899*
Dell Precision™ Workstation 330	Intel® Pentium® 4 Processor 1.3GHz	128MB PC800 ECC RDRAM	32MB NVIDIA GeForce2 GTS Graphics Card	17" Colour (15.9" v.i.s.)	10.2GB¹ Ultra ATA	48X Max Variable EIDE CD ROM	Free Upgrade to: Intel® Pentium® 4 Processor 1.4GHz Free Upgrade to: 20GB¹ IDE Hard Drive	B620616-470206	\$28.15	\$3,299*

Prices include GST. Delivery additional. All offers valid to June 29, 2001. Lease prices for business customers for business use only. These Precision workstations come with: 3.5" 1.44MB Diskette Drive, a Dell Mouse, Microsoft® Windows® 2000 Professional, and a 3 year limited warranty (with a 3 year next business day on Site Warranty).

The DELLWARE™
accessory range offers
hundreds of products
at competitive prices.
Here's the latest top 3.



Kensington® Notebook
Microsaver
\$80*



Lexmark® Z12 Jetprinter
\$119*



LOGITECH® Cordless
Freedom Navigator™
\$215*



© 2001 Dell Computer Corporation. All rights reserved. Dell, the Dell logo, Dell Work Suite, and DellWARE are registered trademarks or trademarks of Dell Computer Corporation in the United States and/or other countries. Microsoft, Windows, and Windows 2000 are registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Intel, Pentium, and Celeron are registered trademarks of Intel Corporation. Xeon and Celeron are trademarks of the Intel Corporation. All other trademarks are the property of their respective owners. Prices are subject to change without prior notice. Other terms and conditions apply. *For hard drives, GB means 1 billion bytes; MB means 1 million bytes. †Prices are inclusive of GST. ‡Australian Personal Computer July 1999, 2000 Reader's survey. §Up to 11MB of system memory may be allocated to support DVMIT graphics. ¶\$10.00 registration fee to take up offer of 12 months internet access with Ozemail. 8 hours of local and national toll-free support. 24 hours of international toll-free support. 24 hours of local and national toll-free support. 24 hours of international toll-free support. DELL5107/APC/GSPREAD

E-D8228-60000-1			
SYM	PRODUCT	DATE	DESIGN GOAL
A	NETSERVER LH 6000	23/02/00	ON [∞]

UP TO SIX INTEL® PENTIUM® III
XEON™ PROCESSORS

EIGHT HOT-SWAP FANS REGULATE
TEMPERATURE IN SEPARATE
"COOL ZONES."

• INTERNAL DUAL-CHANNEL RAID
CONTROLLER W/EXPANDABLE CACHE
AND OPTIONAL BATTERY BACKUP.

• EASY TO CONVERT FROM
PEDESTAL TO 8U RACK

• ALL PWR. SUPPLIES
TO BE HOT-SWAPPABLE.

COLOUR-CODED
TOUCH POINTS.

• SERVICE ALL MAJOR
COMPONENTS W/O TOOLS.

• ONE-BUTTON DISASTER
RECOVERY (OPT.)

• BACKUP
VIA INTERNAL
SURESTORE
DAT 24 X 61 (OPT.)

CAN
WE MAKE
PHYSICAL
CONFIG EVEN
MORE INTUITIVE?

• IF IT'S CRITICAL,
IT GETS A BACKUP
(FANS, POWER SUPPLIES,
CONTROLLER CARDS, HOST BUS
ADAPTERS, HARD DRIVES, ETC.)

INCLUDE REMOTE
ASSISTANT AND
TOPTOOLS.

• ELIMINATE INTERRUPT PROBS.
(TRY PARALLEL I/O CHANNELS/IMPROVED
INTERRUPT SHARING ALGORITHM.)

PRELIMINARY SPECS

- 256 MB SDRAM STD. W/ECC-EXPAND. TO 8 GB
- 256 KB ON-DIE WRITE-BACK CACHE
- UP TO 12 HOT-SWAP ULTRA2 SCSI DRIVES
- EIGHT FULL-LENGTH PCI SLOTS (4 HOT-PLUG)
- INTEGRATED 10/100TX NIC

www.hp.com/go/pc-au

www.hp.com/go/pc-au



pentium®
xeon™



The real genius lies in what you do with it.



Contact your local hp reseller, call 13 23 47 or visit www.hp.com/go/pc-au

THIS AD IS OUT OF

CALL, CLICK OR COME ON IN TO YOUR LOCAL



Gateway Essential 800.
Affordable Powerful PC.

\$1,999¹
Plus delivery²

- Intel® Celeron™ Processor 800MHz
- 64MB SDRAM
- 10GB Hard Drive
- EV500 15" Monitor (13.9" Viewable)
- 48 x Max CD ROM Drive
- 1.44MB 3.5" Floppy Disk Drive
- Integrated Video & Stereo Audio
- Integrated 56K Data/Fax/Voice Modem
- Microsoft® Windows Me³
- Microsoft® Works Suite 2000³
- Gateway™ 1 Year Desktop Warranty



Gateway Performance 1500.
Ultimate Power.

\$3,399¹
Plus delivery²

- Intel® Pentium® 4 Processor 1500MHz
- 128MB PC-800 RDRAM
- 20GB Ultra ATA Hard Drive
- EV700 17" Monitor (15.9" Viewable)
- 32MB nVidia Video Card
- 48 x Max CD ROM Drive
- 1.44MB 3.5" Floppy Disk Drive
- Sound Blaster™ Live! Value
- GCS 300 Speakers
- 56K Data/Fax/Voice Modem
- Microsoft® Windows Me³
- Microsoft® Works Suite 2000³
- Gateway™ 1 Year Desktop Warranty



Gateway Essential 1000.
Ideal Home/Office PC.

\$2,499¹
Plus delivery²

- Intel® Pentium® III Processor 1000MHz
- 64MB SDRAM
- 10GB Hard Drive
- EV500 15" Monitor (13.9" Viewable)
- 48 x Max CD ROM Drive
- 1.44MB 3.5" Floppy Disk Drive
- GCS 300 Speakers
- Integrated Video & Stereo Audio
- Integrated 56K Data/Fax/Voice Modem
- Microsoft® Windows Me³
- Microsoft® Works Suite 2000³
- Gateway™ 1 Year Desktop Warranty



Gateway Performance 1700.
Ultimate Speed.

\$3,599¹
Plus delivery²

- Intel® Pentium® 4 Processor 1700MHz
- 128MB PC-800 RDRAM
- 20GB Ultra ATA Hard Drive
- EV700 17" Monitor (15.9" Viewable)
- 32MB nVidia Video Card
- 48 x Max CD ROM Drive
- 1.44MB 3.5" Floppy Disk Drive
- Sound Blaster™ Live! Value
- GCS 300 Speakers
- 56K Data/Fax/Voice Modem
- Microsoft® Windows Me³
- Microsoft® Works Suite 2000³
- Gateway™ 1 Year Desktop Warranty



Gateway Performance 1000.
Ideal Gaming PC.

\$2,799¹
Plus delivery²

- Intel® Pentium® III Processor 1000MHz
- 64MB SDRAM
- 10GB Ultra ATA Hard Drive
- EV500 15" Monitor (13.9" Viewable)
- 16MB nVidia Video Card
- GCS 300 Speakers
- 48 x CD ROM Drive
- 1.44MB 3.5" Floppy Disk Drive
- 56K Data/Fax/Voice Modem
- Sound Blaster™ Audio PCI 128D
- Microsoft® Windows Me³
- Microsoft® Works Suite 2000³
- Gateway™ 1 Year Desktop Warranty



Gateway Profile 3.
Space Saving Advanced PC.

\$3,999¹
Plus delivery²

- Intel® Pentium® III Processor 933MHz
- 64MB SDRAM
- 20GB Hard Drive
- 15" XGA Active Matrix Colour Screen
- 24 x Max CD ROM Drive
- Integrated Floppy Disk Drive
- Integrated Graphics and Audio
- Integrated 10/100 NIC
- Built in Speakers
- 56K Data/Fax/Voice Modem
- Microsoft® Windows Me³
- Microsoft® Works Suite 2000³
- Gateway™ 1 Year Desktop Warranty

Includes Windows Millennium Edition³ – The Home Version of the World's Favourite Software.⁴



Save on Gateway's Interactive CD ROM Learning Library

With every Intel® based Gateway™ System, you can save on Gateway's Interactive CD ROM Learning Library. Microsoft® Works 2000 Training Suite usually \$549, with every PC purchase only \$219. Microsoft® Office SBE Training Suite usually \$769, with every PC purchase only \$329. (Beginner, intermediate and advanced levels included).

\$SAVE

ALREADY DATE.

GATEWAY STORE FOR ALL THE LATEST PRICES.



Gateway Solo 5300LS.
Lightweight Business Power.

\$2,899¹
Plus delivery²

- 12.1" Active Matrix Display (TFT)
- Intel® Celeron™ Processor 600MHz
- 64MB SDRAM
- 6GB Ultra ATA Hard Drive
- 256K Level 2 Cache
- 8MB S3 Savage AGP Graphics
- Modular 1.44MB Floppy Disk Drive
- 24 x Max CD ROM Drive
- 16-bit Stereo Sound, Internal Speakers
- 2 Type II or 1 Type III PCMCIA slot
- Li-ion battery
- Microsoft® Windows Me³
- Microsoft® Works Suite 2000³
- 311 x 253 x 35.2mm – 2.45kg
- Gateway™ 1 Year Notebook Warranty



Gateway Solo 9500XL.
Business Power Pack.

\$5,499¹
Plus delivery²

- 15" Active Matrix Display (TFT)
- Intel® Pentium® III Processor 900MHz
- 128MB SDRAM
- 20GB Ultra ATA Hard Drive
- 256K Level 2 Cache
- 16MB ATI RAGE Mobility AGP Graphics
- Modular 1.44MB Floppy Disk Drive
- Modular 8 x DVD-ROM Drive
- 16-bit Stereo Sound, Internal Speakers
- Modular 56K Data/Fax Modem
- 2 Type II or 1 Type III PCMCIA slot
- 12-cell Lithium Ion Battery
- Executive Carry Case
- Microsoft® Windows Me³
- Microsoft® Works Suite 2000³
- 322 x 264 x 41mm – 3.5kg
- Gateway™ 1 Year Notebook Warranty



Gateway Solo 5300XL.
Enthusiast Portable

\$3,499¹
Plus delivery²

- 14.1" Active Matrix Display (TFT)
- Intel® Pentium® III Processor 650MHz
- 64MB SDRAM
- 8MB S3 Savage AGP Graphics
- 6GB Ultra ATA Hard Drive
- Modular 1.44MB Floppy Disk Drive
- 24 x Max CD ROM Drive
- 16-bit Stereo Sound, Internal Speakers
- Integrated 56K Data/Fax Modem
- 2 Type II or 1 Type III PCMCIA slot
- Li-ion battery
- Microsoft® Windows Me³
- Microsoft® Works Suite 2000³
- 311 x 253 x 35.2mm – 2.45kg
- Gateway™ 1 Year Notebook Warranty



Gateway Solo 9500XLD.
Take It Anywhere.

\$6,999¹
Plus delivery²

- 15.7" SXGA TFT Colour Display
- Intel® Pentium® III Processor 1GHz
- 256MB SDRAM
- 32GB Ultra ATA Hard Drive
- 16MB ATI RAGE Mobility AGP Graphics
- Modular LS120 Super Disk Drive
- Modular 8 x DVD ROM Drive
- Modular V.90 56K Modem
- 2 Type II or 1 Type III PCMCIA slot
- Executive Carry Case
- Microsoft® Windows Me³
- Microsoft® Works Suite 2000³
- Gateway™ 1 Year Notebook Warranty

Gateway™ stores open 7 days:

Sydney: 225 Clarence Street. **Castle Hill:** Castle Towers. **Chatswood:** 380 Victoria Avenue. **Moore Park:** Homemakers Supacentra. **North Sydney:** Greenwood Plaza (Monday-Friday). **Warringah:** Warringah Mall Shopping Centre. **Melbourne:** 388 Bourke Street. **Preston:** Northland Shopping Centre. **Chadstone:** Chadstone Shopping Centre. **Adelaide:** 58 Gawler Place. **Brisbane:** 47-79 Elizabeth Street. **Mt. Gravatt:** Garden City Shopping Centre. **Canberra:** Petrie Plaza Entrance, Canberra Centre. **Perth:** 938 Hay Street. **Booragoon:** Garden City Shopping Centre.



pentium® III

OVER 80 TELSTRA SHOPS.
131 800

TAILOR AND ORDER YOUR PC
24 HOURS A DAY.
www.gateway.com.au

CALL GATEWAY™
1300 302 475



Gateway™

"You've got a friend in the business.™"

¹ Offers valid till 10th July 2001 or while stocks last, whichever is the earlier. Not valid with any other offer. ² Delivery is available throughout Australia (except to certain remote locations) at \$82.50 (\$75+GST) for desktops and \$55 (\$50+GST) for portables. ³ All software included is OEM version only (online manuals only). ⁴ As claimed by Microsoft. ©2001 Gateway Pty Ltd. All rights reserved. Gateway and the stylised logo are trademarks of Gateway Pty Ltd. Intel, the Intel Inside logo, Pentium and Celeron are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. All brands and product names are trademarks of their respective companies. All sales subject to Gateway's limited warranty and standard terms and conditions. GAT 268/APC

Contacting APC

For general queries and comments, email is APC's preferred means of communication:

apc@acptech.net

You can also use the feedback form on our Web site:

apcmag.com/feedback

Reader enquiries/back issues

Contact Editorial Assistant

Phone (02) 9288 9123

Email apc@acptech.net

Post APC

PO Box 4088

Sydney NSW 1028

Fax (02) 9267 4909

We run out of most issues quickly, so please contact the editorial assistant before sending a cheque.

Cover CDs

If you have any problems with our cover CDs, refer to the Help section on the back of the CD insert.

Reprints and copyright

Contact Heather Milley

Phone (02) 9332 2675

Advertising enquiries

If you're interested in advertising in APC, please contact us on:

Phone (02) 9288 9150

or visit acptech.net/advertising

Media releases

Media releases can be emailed to newswire@acptech.net. Due to the volume of mail we receive, we are unable to confirm receipt of releases.

Subscriptions

One year's subscription is just \$79!

For subscription enquiries or problems:

Phone 13 61 16

Email subsquery@acp.com.au or visit magshop.com.au

For full details see our subscription ad on page 96.

Editorial submissions

Please let us know if you have an idea for an article or review you'd like APC to cover.

If you'd like to write for APC, please email apc@acptech.net a brief résumé with an outline of your experience and interests, a sample of your writing and an outline of the article you have in mind. We appreciate submissions, but can't guarantee a reply.

Australian Personal Computer is published by ACP Tech, a division of ACP Publishing Pty Ltd (ACN 053 273 546). Printed by Hannanprint Pty Ltd. Material contained within Australian Personal Computer is protected under the Commonwealth Copyright Act 1968. No material may be reproduced in part or in whole without the written consent of the copyright holders. Distributed by Network Distribution Company, 54 Park Street, Sydney NSW 1028. Phone: (02) 9282 8777

EDITORIAL

Editor	David Flynn
Deputy Editor	Vanessa Richardson
Senior Reviewer	Darren Ellis
First Take Editor	Alex Kidman
Journalist	William Maher
Journalist	Fiona Angus
Journalist	Daniel Gardiner
Technical Assistant	Ryan Shaw
Book Review Coordinator	Lindsay Hayman
Editorial email	apc@acptech.net
Press releases	newswire@acptech.net

PRODUCTION

Creative Director	Michèle Heibel
Chief Sub-Editor	Gail Lipscombe
Sub-Editor	Suzanne Fraser
Sub-Editor	Jocelyn Hungerford
Sub-Editor	Megan Smith
Graphic Artist	Craig Carroll
Film Coordinator	Ruth Hayes

ELECTRONIC PRODUCTION

Electronic Production Editor	Suzanne Quill
Notes/Web Developer	Dan Lowden
CD/Web Assistant	Nola Camden
CD/Web Assistant	Lachlan Grant
CD/Web Assistant	Laura Kane
CD/Web Assistant	Lawrence Kwek
CD/Web Assistant	Mark Reay

ADVERTISING

National Advertising Manager	Wade Gilmore
NSW Advertising Manager	Cameron Curtis
Senior Account Manager	Sumit Roy
Account Manager	Amorette Judd
Account Manager	Glenn Tripney
Account Manager, PC Supermarket	Ben King
Account Manager, Marketplace	Nima Price
Advertising Production	Susan Harrison
Advertising enquiries	(02) 9288 9150
Advertising email	wgilmore@acp.com.au

ACP TECH

Publishing Director	Glenn Rees
Marketing Brand Manager	Mark Harrison
Group Creative Director	Michèle Heibel
Assistant Brand Manager	Helen Duncan
CEO	John Alexander
Group Publisher	Jill Baker

Correction

The review of Access 2002 on page 88 of the June issue of APC described FileMaker Pro as operating at a "basic flat-file level". This is incorrect — FileMaker Pro has been a relational database since version 3 of the software was released in 1995. APC apologises to its readers and to FileMaker Inc. for this mistake.

Advertisers' index

A Brighter Image	101
Acer	73
Adobe	35
American Power	89
Beyond	71
Brother	19, 33
Canon	12, 13, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63
City Software	93
Computer Parts Land	85
Dell	Gatefold, inside front cover
DH Technology	83
Digital Star	95
dingo blue	37
Epson	9
Fuji Xerox	1, 77
Gateway	4, 5
Hallmark	127
Hewlett-Packard	2, 3
In Learning	131
McCorkell	81, 105
Magic Moments	20
MicroGram	129
MSI	133
NEC	23
Ocean Office Automation	134, 135
Optus@Home	31
Ozemail	17
Paper Linx	69
Philips	39
Pioneer Computers Australia	139
Rome Technology	111
Saab	7
Samsung	109
Sony	29
Sophos	65
TPG Internet	Outside back cover
Ulead Systems	103
Viewsonic	79
Yellow Pages	99

PC SUPERMARKET

APD	157
Australian Computer Recyclers	160
Australian Computers Online	175
Australian PC Accessories	156
Corporate Software	168, 169
EcomComputers	153
First Technology	164, 165
Forté	162, 163
NaSa Technology	172, 173
National Communications	166
New Reality	158, 159
PC Club	161
Peripherals Plus	155
Qflow	154
Sigmacom	167
Swann	170
Trinity International Computers	176
United Satellite	174
Universal Micro	171

MARKETPLACE

177 to 184



Are Saab engineers
the automotive

oracles?

First with
safety belts
as standard
(1962)

First with
heated
seats
(1971)

First with
reliable turbo
engines
(1976)

First with SAHR
- Saab Active
Head Restraint
(1996)

First with EBFD -
Electronic Brake
Force Distribution
(1997)

These are just a handful
of the many safety,
performance, and luxury
innovations, that Saab
has introduced to the
motoring world.

To experience the result
of innovative thinking
for yourself, or to
find out more, call
Saab Central now
on **1800 7222 93**.



SAA10489/APC/0701

Saab
95
Estate

NOLL%

Noll is Swedish for 'Zero'
and that's exactly how
much interest you'll pay
for the first 12 months
on a new Saab 9-5.*



For more information

visit saab.com.au or
call **Saab Central** on **1800 7222 93**

*Offer available only to approved commercial purchasers, on Commercial Hire Purchase (NSW, VIC & SA) and Lease (QLD & TAS) agreements only. Normal dealer delivery charges and state registration/compulsory insurance levies are not included in the finance package, these are payable on delivery. Offer only available on model year 2001 9-5 automatic 2.0L Sedan and 2.0L Estate. Offer ends July 31 2001, or while stocks last.



David Flynn

David Flynn can be contacted at
apc@acptech.net.

Intel and AMD are fighting for supremacy in the rapidly maturing notebook market — and consumers will be the winners.

Notebooks take the lead

The words 'personal computer' usually signify the desktop PC — a big system box and an even bigger monitor vying for your precious desk space. But it's becoming increasingly viable to consider a notebook as your next PC. These days, more notebooks than desktops seem to find their way on to APC's test benches, and the pace of portable technology certainly appears to be quickening.

Admittedly, notebooks are more expensive than their land-locked counterparts. A notebook costs half as much again as a roughly equivalent desktop — and that's when only the specification level is taken into account, and elements such as PCI slots and 17in monitors (where the desktop has a natural advantage) are ignored.

Notebooks are not ergonomically sound unless you kit them out like a desktop PC with a mouse, full-size keyboard and a larger screen, and all of this pumps the price up. Never-

theless, notebooks are where the action is.

The tussle between Intel and AMD is not confined to the desktop market; an all-out battle is also being fought over the notebook. At the time of writing, Intel was expected to launch five new processors for the mobile market. Each will be based on the Pentium III, which is nearing the end of its life as a desktop chip, but finding new life as a revved-up mobile powerplant.

Codenamed Tualatin, these chips are expected to offer a fast 133MHz bus, 512K secondary cache, a more efficient version of SpeedStep and, most importantly, they will be etched at 0.13 micron — down from the current 0.18-micron standard. Tualatin chips should rocket up to 1.13GHz, yet consume less power than earlier chips and come in a smaller package. This will allow Intel to build the Tualatin engine into subnotebooks, and will, I suspect, prompt a new wave of compacts able to handle everything a desktop can.

AMD's short-term strategy is a made-for-mobile version of the Athlon increased to 1GHz, but the company is sure to respond quickly to Intel's challenge.

While both companies jostle for the lead, Transmeta is setting itself up for a rail run. An alliance with notebook leader, Toshiba, will see the Crusoe processor used in its palmtop Libretto mini-notebook. Despite being withdrawn from the shelves locally, the Libretto is still popular in Japan. Toshiba joins Sony, NEC and Hitachi in using the Crusoe. This is an impressive list, but a deal with a major US-based brand has yet to be negotiated.

The chipmaker also plans to shift to 0.13 microns, increase speed to 800MHz and trim power consumption to 80% of current levels. Further down the track, we're told, Transmeta will introduce a 256-bit processor core and decrease the size in the hope of becoming the OEM's chip of choice for wireless 'tablet' PCs and mini-notebooks.

All this is happening in notebooks alone. Compare this to the relatively boring desktop scene: another slightly faster chip — yawn; a still bigger hard drive — yawn.

There are also wireless innovations, set to become a major factor in the portable's favour, to consider. Drop an 802.11 card into your notebook's PC Card slot, or buy one of the new machines with factory-fitted wireless transceivers and antennae, and you'll be able to log on to the network quickly at the office or at home. This month, I've been playing with (and let's be honest, there's no other word to describe it) the SkyNetGlobal service (see page 24). SkyNetGlobal offers wireless access points at select city locations. In the US there are plans to build 802.11 hubs into every Starbucks coffee house. Checking email and accessing network folders while you sip your latte — now that's cool. It's part of the high-tech lifestyle that everyone should enjoy. ■

Notebooks are
where all the
action is.

DEPEND ON EPSON
FOR QUALITY BEYOND PHOTOS,
WHATEVER YOUR BUDGET.



Whether you need a printer for home use or a demanding business, you can depend on EPSON for the most advanced colour print quality. All the colour inkjets in the range feature EPSON's breakthrough Micro Piezo™ technology. From the unsurpassable 6-colour QuickDry™ Ink System for realistic skin tones, to the world's smallest ink droplet and 2880dpi resolution to capture the finest details, EPSON gives you photo images that leap off the page.

EPSON®
THE POWER TO CREATE



Sydney (02) 9903 9000 Melbourne (03) 9685 6555
Brisbane (07) 3360 0219 Adelaide (08) 8338 4660
Perth (08) 9480 0418. Or visit www.epson.com.au
EPS 0499 Brandhouse

- 185 CD Contents
- 15 Newswire
- 25 First Take Contents
- 117 Corporate IT Contents
- 125 Workshop Contents
- 6 Advertisers' Index
- 6 Contacts

- 46 Readers' Say
- 50 Flashback
- 52 Two Bits
- 58 Price Watch

Get some tips on finding the right audio system for your PC.

- 60 Service and Reliability
 - 64 Cutting Edge
- Will monitors be replaced by your retina?

AFTER HOURS

- 187 **GameZone**
Fallout Tactics; F1 Racing Championship; Tribes 2; Settlers IV
- 190 Gamespy
- 192 **After Hours Special Report**
APC examines the next chapter in the groundbreaking Myst series.
- 195 **From the Stack**
Dot com success, online jokes, an exploration of the mind and a thrilling whodunnit.
- 196 **Best Ever Games**
Puzzle games
- 198 **Web File**
APC's selection of careers sites can help you search for jobs, overhaul your resume and practise your interview skills.
- 200 **Chip Chat**
The JokeWallpaper Web site gets up to mischief with Photoshop.

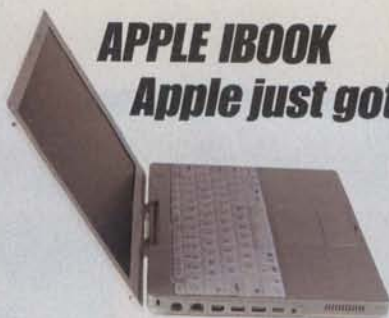
FIREWIRE Ready, aim, FireWire

Finding serial and parallel ports too slow? Sick of sluggish USB? Maybe it's time to rev things up with FireWire and USB 2.0.



66

APPLE IBOOK Apple just got juicier



Lighter, faster, cheaper and prettier: discover the new iBook.

Also in First Take: Small Business Server 2000, Virtual PC for Mac and more...

In First Take **24**

ACCOUNTING SOFTWARE Balancing the books

APC puts accounting packages through their paces to find the ones that *really* add up.



74



MULTIPLAYER GAMING Group therapy

Multiplayer gaming has exploded in the last few years. APC sets out to discover what makes the genre tick and takes the best games for a spin.

86

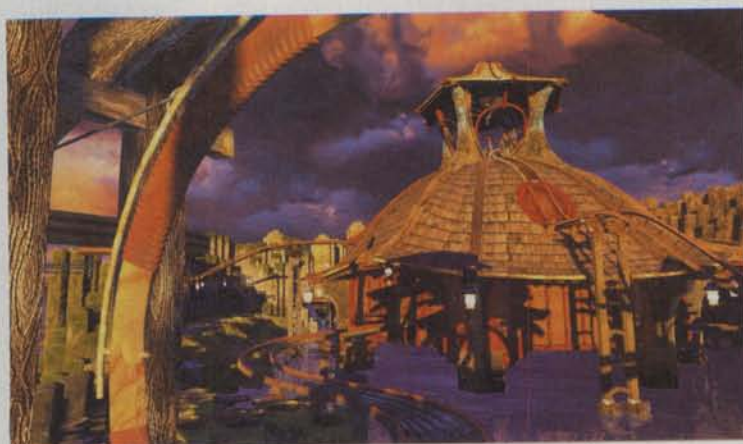
WEB DESIGN TRENDS

Construction site

The 1990s saw fancy but impractical aesthetics prevail in Web design. Has anything changed? APC looks at current Web design philosophy, and finds that simplicity is back in vogue.



106



MYST REVIEW

Out of Myst . . . and into Exile

With a new author, new technology, new characters and five new worlds, can Myst III: Exile do the impossible and drag gaming into the mainstream?

In AfterHours 192

TELCO WARS

The problem with ADSL

Telstra is taking another beating, this time from DSL providers who have branded Telstra's DSL roll-out inconsistent and expensive.

Also in News: Intel looks beyond the desktop market, Microsoft introduces software subscription services and Australia's domain name market comes in for criticism.



In Newswire 22

PKI SOFTWARE

Can PKI secure its own future?



To date, public key infrastructure certification has enjoyed little success. However, as APC discovered, government, manufacturer and customer commitment to the technology is finally securing its future.

Also in Corporate IT: APC assesses the future of knowledge management and the continuing demand for Java skills in IT hiring.

In Corporate IT 121

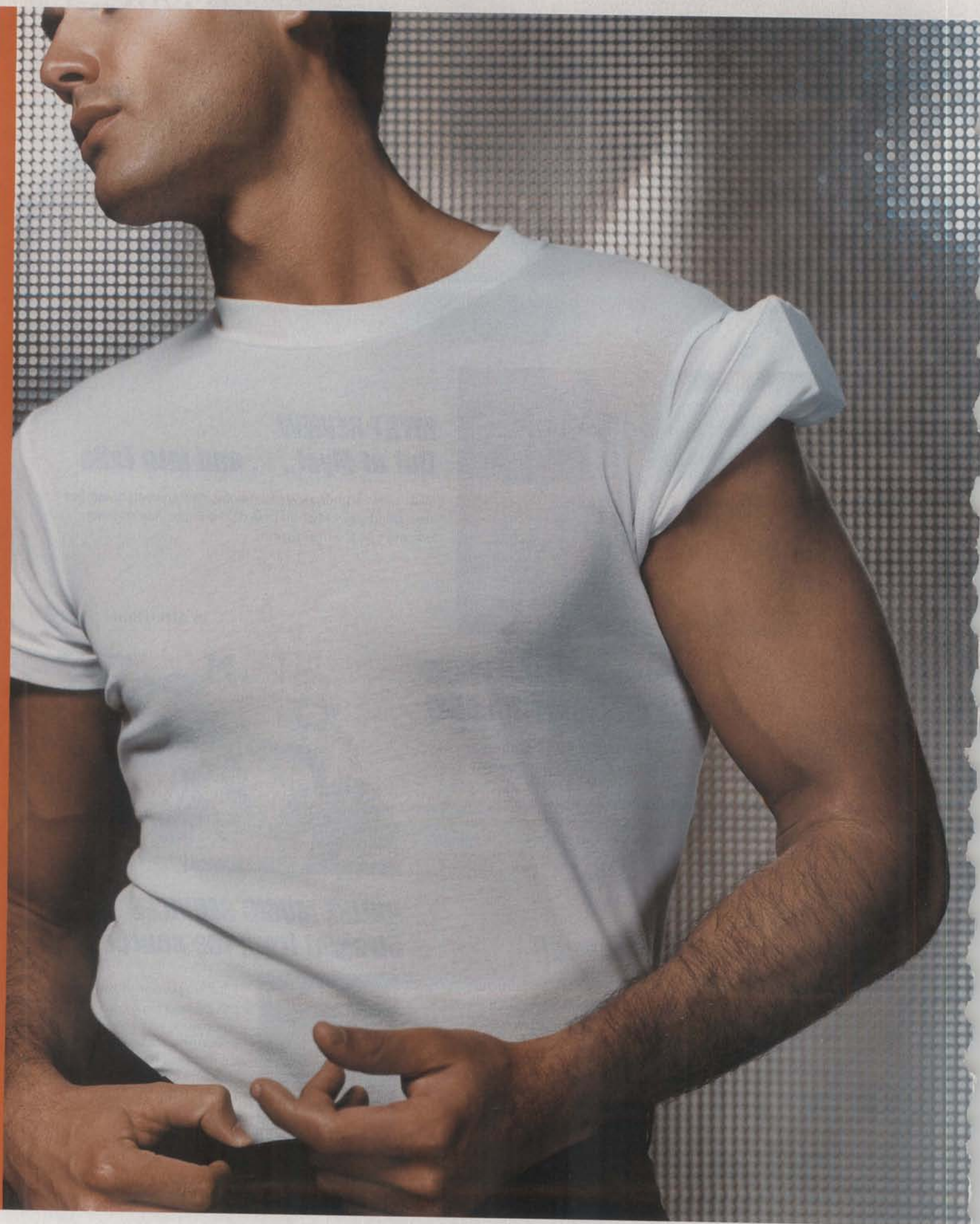
ONLINE MUSIC SERVICES

Straight from the source



Bypassing online music services and big record companies, well-known performers are beginning to offer their own online subscription services direct to fans. Is this the future of popular music?

113



He wears
the PowerShot Digital IXUS V.
The world's smallest 2x optical
zoom digital camera with 2.11
megapixel resolution. It records
smooth movie clips with sound and
its sexy stainless steel body
means it never looks out of place.

For more information call 1800 816 001
or visit www.canon.com.au/digitalimage

Canon

PowerShot

DIGITAL



The 'go anywhere' PowerShot Digital IXUS V.



think in colour

[think speed, think phaser]

Think at blazing speeds that close the gap between colour and black and white printing.

Think the new Fuji Xerox Phaser® 2135.

An incredibly fast 21 pages per minute (ppm) in colour, 26 ppm in black and white, the Phaser 2135 delivers consistent, dependable, razor-sharp colour, crisp black and white, A4 and A3 – a breakthrough that removes the need for a separate mono and colour printer.

Your business deserves the best, **so think in colour.**

Think Fuji Xerox Phaser 2135 colour printer.

Call **1300 369 519** or visit

www.thinkphaser.com/au/apc

for your nearest reseller or more information.



THE DOCUMENT COMPANY

FUJI XEROX

Microsoft is trialling a new subscription plan for software rental.

Microsoft steps out of the box

If Microsoft has its way, you may never own another software package again. On May 31, the US giant began its Office XP subscription trial for home users, and from October 1, businesses will be able to rent any Microsoft product.

The overhaul of licensing contracts is part of Microsoft's plan to provide 'software as a service'. Instead of buying a software package outright, customers will pay an annual fee to use particular applications. Microsoft argues that this will lead to faster and smoother upgrades, but the details of the first subscription model show that many people will be forced to pay more.

Microsoft estimates that the changes to its enterprise licensing arrangements will leave 20% of businesses worse off. "These customers tend to upgrade less," Microsoft Australia licensing manager Robert Vogler said. He claimed businesses that use the same software for more than four years will be better off buying a full licence, especially as they have no way of knowing when prices could rise.

"Customers don't know what the licence price will be in the future; it could well be more expensive, and the customer has to weigh up the options," he said.

"Companies need to sit down and figure out what their upgrade cycle will be." An initial rental licence will be 29% of the cost

of a full licence. Businesses get the product, as well as support and upgrades for three years. After that, they can pay an annual fee.

Australia's sixth largest accounting firm, Stockford, is one of 11 local companies currently testing the subscription service. Stockford's manager of group IT Andrew Fern said that renting is cheaper than purchasing a full licence and makes it easier for him to manage support and maintenance. "Software becomes redundant very quickly. It is not a good asset because it depreciates very quickly," he

said. The subscription contract allows Stockford to run any Microsoft application. "You have to pay for the latest software whether you use it or not, but it still makes sense for us," he said.



Microsoft estimates that the changes to its enterprise licensing arrangements will leave 20% of customers worse off.

Microsoft is still conducting tests to see whether the retail sector is ready for annual rental fees. The concept has been treated with scepticism in the US, where many people argue that Microsoft is trying to ensure steady licence revenue. According to Vogler, the ongoing fees will make Microsoft's revenue "less spiky" and encourage customers to upgrade sooner. This will protect Microsoft from periodic downturns in the PC market. Microsoft recently scrapped a subscription trial for Office XP in the US, and will be carefully assessing consumer

attitudes during testing in Australia. He argues that annual licences will also benefit Microsoft by reducing piracy. "One of the main reasons customers are noncompliant is that they are confused about which upgrades they qualify for," he said. "This complexity of licensing means we contribute to corporate piracy."

Vogler admits that it may take some time for people to view software as a 'service' rather than a commodity.

Microsoft insists that the changes will make buying software less complicated and allow customers to compare prices easily. Under the new model, Microsoft plans to release software upgrades in smaller components, rather than larger, full versions. Customers will be able to track and update their licences through a huge online database.

Autodesk will also introduce subscription licences in Australia at the end of the year. It also hopes the move will reduce illegal copying. Autodesk's South-East Asia Pacific regional director Andre Pravaz indicated that the company is promoting software rental for periods as short as 30 days. "Pirates often claim they copy software for one-off projects or tasks," he said. Temporary contracts will

also help smaller companies write off software as an ongoing expense, rather than an asset, in accounting procedures.

Lotus and Oracle already offer subscription services. Vogler admitted that compared to these companies, Microsoft has been slow to add a rental option to its licensing program. Microsoft has been offering limited subscription purchasing to businesses since September 2000 through its Application Service Provider (ASP) scheme. "ASP is very slow right now. It will take some time to shift mentality," he said.

According to Vogler, there are no plans to stop offering full licences, but he said that Microsoft's contracts will continue to "evolve".

Fiona Angus

Intel is expanding its reach beyond
the desktop PC market.

Intel: Where to from here?

Times are changing at Intel. The chip giant is experiencing pressure from competitors and customers, as well as trying to expand its activities beyond the desktop PC market.

Intel is still a long way ahead of its competition, but its net income has dropped significantly in recent quarters. Several reports predict that worldwide chip sales will fall by at least 10% this year.

Meanwhile, Intel has been crucified in the media for everything from technical problems in Pentium III chips to its support for Rambus memory. The initial reaction to the Pentium 4 was lukewarm, and since then, the prices of several Pentium chips have been dropped drastically.

In addition, Intel rival AMD has been gaining exposure with the Athlon 4, its 1GHz chip for notebooks. At the time of writing, reports also said that Dell might finally begin selling AMD-equipped notebook computers.

Intel executives aren't amused by the attention being paid to AMD. At the company's recent developer conference in Beijing, chief technology officer Patrick Gelsinger responded sharply to questions about AMD's Athlon chip.

"I find these comparisons between Athlon and the Pentium 4 humorous, because they entirely miss the point. We start with this generation — the Pentium 4 — and it's going to scale continuously and leave the others in the dust," he said.

Gelsinger is more comfortable talking about Intel's other plans, which include efforts to make the chip giant a key player outside the desktop PC market. The company wants its technology to become a key component in handheld computers, mobile

phones and powerful data servers and communications products.

One recent development is Intel's three-in-one chip, which combines a processor, flash memory and digital signal processor. The chip is designed to add more powerful data capabilities to portable devices such as mobile phones. Other manufacturers are already trying similar chips.

To help speed up the introduction of these chips, Intel wants designers of portable devices to start using a standard framework for adding data components such as chipsets and processors. The idea is that software could be written for a standard processor design and could therefore be used in a wider range of devices.

For Intel, the plan means more opportunities to sell its StrongARM processor — a chip designed to add input/output and video and data capabilities to mobile devices — as well as its successor, Intel's XScale Microarchitecture. XScale is a set of chip technologies designed to keep processors running at the highest possible speed and save power at the same time. Intel also sells flash memory and associated software.

Intel is applying a similar approach to power computing, where the company is hoping to make its mark with the 64-bit Itanium processor. Intel wants companies to use the Itanium as the standard around which they build their data centres.

"We're going to see companies such as NEC and Hewlett-Packard targeting Itanium for future high-end architecture," Gelsinger said. Intel's high-end push will encroach on the domain of manufacturers such as Sun. AMD also has plans for 64-bit chips.

Industry watchers are also comparing Intel's effort to upgrade the PCI technology (for connecting processors to graphics cards and other devices) in desktop computers with similar efforts by AMD.

Many argue that the issue could divide manufacturers, but Gelsinger describes AMD's technology as "short-sighted" and claims it is only an interim solution. "AMD's technology is an interesting improvement, but from



▲ Intel's 64-bit Itanium processor for workstations and servers

our point of view, it's wholly inadequate and insufficient for what will be required in the next decade," he told APC.

Intel also wants some of the action in the burgeoning telecommunications market. The company has offered networking products for some time, and is now consolidating that technology under the name Intel Internet Exchange Architecture (IXA). The range includes network processors, software kits and other devices.

The general manager of Intel's networking group Sean Riley said that Intel wants telecommunications providers to use the IXA product set instead of "designing silicon from the ground up".

Even on the desktop, the Intel brand is being used for more than just chips. The company now has a range of 'home' products, including game controllers, toy microscopes, MP3 music players and video cameras. Most of these products are designed to take advantage of the Pentium 4's multimedia capabilities.

Meanwhile, computer owners continue to be bombarded with new processors. The Pentium 4 will get an upgrade in Intel's fourth quarter, when manufacturing plants move from 0.18 to 0.13-micron transistor technology. Intel will also upgrade its mobile Pentium III processor, which competes with AMD's Athlon 4. AMD is also planning its own 0.13-micron chips.

Intel is confident that it can keep Moore's law alive for at least the next 10 years, so competition is only likely to heat up.

William Maher

William Maher travelled to Intel's International Developer Conference in Beijing as a guest of Intel.



▲ The Intel logo has also found its way onto a toy microscope, game controllers and music players.



DON'T STAY HOME WITHOUT IT.

If shopping over the Internet with your credit card worries you, you're certainly not alone. Over eighty five percent of Internet users feel exactly the same way.^{*}

Introducing OzEpay, a revolutionary and simple solution from OzEmail that lets you shop online without sending your credit card details over the Net. Just click on OzEpay at any of the quality shops that display the OzEpay logo and we'll complete the transaction for you safely, privately and fast.

OzEpay takes the details of your purchase, then immediately bills the same credit card you use to pay

your OzEmail account. Your credit card details won't travel the Internet, in fact they'll never leave the OzEmail "vault," so there's no risk of your private information falling into the wrong hands during the transaction.

To find out more about OzEmail's revolutionary safe way to shop, visit www.ozepay.com.au.

OzEpay is only available to loyal OzEmail Internet subscribers*, so now you have even more reason to join Australia's favourite ISP. Call us today on 132 884 for your free OzEmail Internet Starter Kit.



OZEMAIL

AUSTRALIA'S FAVOURITE
www.ozemail.com.au

*Source: eMarketer, ePrivacy & Security Report, January 2001, Page 45.

*OzEpay is currently available to OzEmail subscribers of over 6 months with a credit history satisfactory to OzEmail.

System breakdowns, high prices and poor service could undermine Australia's Internet identity.

Australia's domain shame

As the global domain industry moves ahead with new names, greater competition and better technical infrastructure, Australians are stuck with high prices, old technology and poor service in the .com.au domain space.

Domain registration is a cutthroat industry dominated by three letters: c, o and m. The first new top-level domains since the mid-1980s, .biz and .info, are in pre-registration stages and will be online from September. However, the preoccupation with global domains has overshadowed recent upheaval in the .au space.

Melbourne IT, the company that holds the exclusive right to register .com.au names, has invested \$6 million in an international joint venture to branch into the .biz space. Melbourne IT wants to make .biz the next .com — minus the cybersquatting and congestion. Chief technology officer Bruce Tonkin said initial interest in .biz has been strong. "Dot com was meant to be the original commercial space, but it has tended to be used by everyone. It's become an Internet junkyard," he said. Right now, 63% of the world's 35.5 million domain names end in .com, while 80% of the 300,000 .au names are in the .com.au space. Verisign, the US company with a monopoly over .com, .org and .net, recently agreed to relinquish exclusive rights to .org and .net. Melbourne IT hopes to make .biz a business directory around which it can build extra business services. "We want to create the same environment for international business that Australian businesses have with .com.au," he said. The .com.au space has been protected by tough policy restrictions that ensure only people with a valid business identity can register a name.

However, even as Melbourne IT moves ahead with .biz, Tonkin warns that the .com.au space could be at risk. He said that a series of system failures in the database that houses .com.au names is threatening to undermine business confidence in the space. "There have been major problems and people are losing faith in the system," he said. Unlike .com.au, .biz is backed

up by real time domain processing through a stable database.

The industry self-regulatory body operating the .com.au database, auDA, claims that the malfunctions are the result of old technology and increased demand. The system was originally set up and run by volunteers. auDA acquired the database in February and is in the process of moving the information to a new server as part of wide-ranging industry reform. The chief policy officer of auDA, Jo Lim, described this as an "interim measure" until the end of the year, when proposed new competition policies are due to come into effect. "The idea is that a professional firm will handle the database," she said. The new policies aim to loosen a number of restrictions in the .au space and break Melbourne IT's monopoly over .com.au. Many Internet users are angry that the price of registering a name in the .com.au space is much higher than it is for .com. "Melbourne IT is free to set its price. There is no transparency and we have no idea what it costs them to operate," she said.

According to Lim, competition is likely to reduce the price of a .com.au address, but she warned not to expect a huge price cut. "Dot au will still have policy checks and that adds to the cost. There is likely to be a significant decrease, but we can't see that prices will come down as much as they have for .com." Companies that submit a tender to operate .com.au under the new regime will be judged on the wholesale price and the technical expertise they can provide. "We would expect firms that run big databases, as well as overseas companies, to submit a tender," she said. "There is more out there than just Melbourne IT."

However, Tonkin claims that the most significant issue in the .com.au space is service, not competition. "The main issue now is implementation and making sure that the stability of .com.au is maintained," he said. "We see it as less about competition and more about implementation. The domain name industry is already opened up — it's more about quality of service." According to Tonkin, most Internet users are preoccupied with the prospect of new names in the .au space and allowing place and generic names to be registered. Lim said there is little research into how many people want more domains. "We are working from the assumption that with more people using the Internet, more people will want to start registering a domain name." Whether there will be a .biz.au domain (.info.au already exists) will depend on auDA's public consultation process. "There is no .biz.au. Just because it is in the international space doesn't mean it will be replicated in .au," she said.

Meanwhile, domain resellers and Internet users must wait out the protracted reform process. "In Australia, there is a perception that people are being ripped off," said Dominic Mulligan, managing director of Web hosting company Ilisys, one of a number of businesses which subsidise Melbourne IT's prices.

The Perth-based company provides its hosting customers with .au names at (or near) cost price and 'piggybacks' domains on other services. Despite the markdowns, Mulligan estimates that only 35% of his customers register in the .au space. "It's hard for them to justify a fee many times higher," he said. He has also been frustrated by the breakdowns in auDA's database and has been blocked from registering .com.au names for "substantial periods".

"The .com.au domain is dedicated to the business community and the inability to register domains and conduct basic searches simply isn't acceptable," he said. He is able to register a .com name in under a minute, while a .com.au normally takes about two days.

Fiona Angus



IT'S NOT JUST A COPIER, IT'S A LEADER.

Digital Flatbed Copier

PC Fax

Laser Fax

Laser Printer

Digital Flatbed Colour Scanner

Never has there been a Multi-Function Centre™ that has the speed, quality and overall capabilities of the Brother MFC-9600. One of its unique features is a Digital Flatbed Copier with printing speed of 12 copies per minute, along with a 50 page automatic document feeder and a multi-copying system. You'll find the speed is accompanied with the quality of a 600 dpi copy output for great presentations. It all adds up to make the MFC-9600 the leader in speed, practicality and quality.

PLUS FREE BROTHER P-TOUCH LABELLER (WORTH \$99) WITH EVERY MFC-9600 PURCHASE.



At your side.

brother®

Brother State Offices: NSW/ACT: (02) 9887 4344 VIC: (03) 9699 4844 QLD/NT: (07) 3348 9266 SA/TAS: (08) 8272 1300 WA: (08) 9478 1955 www.brother.com.au

Participating stockists only. Offer valid from 1st May 2001 to 30th June 2001. P-Touch model PT-1100 RRP value \$99.00. BR031519/APC

>> our business is to serve you

Email & Web Hosting Packages

all prices include GST

Existing Clients will automatically be upgraded

Reserve \$75/yr.

- Single email address forwarding to a single destination
- Web Forwarding or
- MX forwarding

Lite \$120/yr.

- 5 MB web/ftp hosting space
- Hosted on Linux Server
- Unlimited email addresses forwarding to a single destination
- Own CGI-BIN
- 500 MB of transfers per month

Basic \$199/yr. or \$18.50/month

MORE SPACE!

- **20MB web/ftp hosting space**
- **1 POP3 email box (NEW FEATURE!)**
- Unlimited email addresses forwarding to multiple destinations
- **imail** (web mail)
- MYSQL and PHP4 support
- Own CGI-BIN
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Remote control panel via web interface
- Full graphical site statistics
- 1 GB of transfers per month

MORE SPACE!

Plus \$275/yr. or \$25/month

- **20MB web/ftp hosting space**
- 10 POP3 email boxes
- Unlimited email addresses forwarding to multiple destinations
- **imail** (web mail)
- MYSQL and PHP4 support
- Own CGI-BIN
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Remote control panel via web interface
- Full graphical site statistics
- 1 GB of transfers per month

Our Special Feature



This system turns any web browser into your personalized email platform. imail is similar to the systems offered by companies like; hotmail, mailcity and lycosmail, but with the significant benefit that the emails you send will appear to have come from your alias at your domain.

Comparisons with other web hosters as taken from their websites on 24 April 2001

Domain name costs are for 2 years and include GST-

Company	ilisys	Ozemail	Web Central	Net Registry	Telstra
.com .net .org	\$40	\$66	\$66	\$110-\$137.50	Not Offered
.com.au	\$110	\$135	\$135	\$140	\$330

Entry-level domain hosting packages (lowest price domain hosting packages detailed on each company's web page on 24/04/01)

Company	ilisys	ilisys	Ozemail	Web Central	Net Registry
Hosting package	lite	basic	Economy	Economy	Promoter
Server space	5MB	20MB	20MB	20MB	35MB
Monthly transfers	500MB	1 GB	500 MB	500 MB	1 GB
Domain name .com	\$40	\$40	\$66	\$66	\$110
	for 2 years	for 2 years	for 2 years	for 2 years	for 2 years
Set up fee	0	0	\$64	\$64	\$108.90
Cost of basic package	\$120	\$199	\$420	\$420	\$382.80
Total including GST	\$160	\$239	\$550	\$550	\$601.70

Specifications vary from package to package

Naming Authority Fees

>> Global domains **\$20 / year**
(.com .net .org)

UK domains (.co.uk, .org.uk) **\$20**

Australian domains (.com.au) **\$110**

UK & Australian domain fees cover registration for 2 years

Business Packages

Company	ilisys	Ozemail	Web Central	Net Registry	Telstra
Hosting package	SoHo	Business Site	Business	The Business	Business
Server space	50MB	70MB	70MB	50MB	75MB
Monthly transfers	1 GB	750 MB	750 MB	1.5 GB	1GB
Domain name .com	FREE	\$66	\$66	\$110	\$330
		for 2 years	for 2 years	for 2 years	(.com.au- for 2 years)
Set up fee	0	\$97	\$97	\$108.90	\$110
Cost of basic package	\$399	\$665	\$665	\$778.80	\$1320
					(\$110/month)
Total including GST	\$399	\$828	\$828	\$997.70	\$1760

Specifications vary from package to package

Quality Web Hosting *at an affordable price*

The ilisys Group has been in the business of web hosting since 1995 and has prospered through the dot com bubble and bust. Our group has offices in Britain, Germany, Thailand, and Australia. We currently manage in excess of one hundred thousand domains and house over twelve hundred co-located servers in our data centres.

We know that you expect your site to be professionally managed 24/7. We take that responsibility seriously. All our Australian clients' sites and servers are hosted in our Australian data facility, under the control of our skilled technicians. We use state-of-the-art hardware like; Dell, Cisco & Cobalt to ensure that your on-line presence is available to whoever wants to access it, whenever they want to access it.



No hidden set up fees or inflated domain name costs!!

SoHo \$399/yr. = \$35/month

MORE SPACE!

- **50MB web/ftp hosting space**
- 10 POP3 email boxes
- Unlimited email addresses forwarding to multiple destinations
- **imail** (web mail)
- 5 autoresponders
- SSL secure server facilities
- Access and File Maker Pro support
- MYSQL and PHP4 support
- Own CGI-BIN
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Remote control panel via web interface
- Full graphical site statistics
- 1 GB of transfers per month

Standard \$489/yr. = \$45/month

MORE SPACE!

- **100MB web/ftp hosting space**
- 15 POP3 email boxes
- Unlimited email addresses forwarding to multiple destinations
- **imail** (web mail)
- 10 autoresponders
- SSL secure server facilities
- Access and File Maker Pro support
- MYSQL and PHP4 support
- Own CGI-BIN
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Remote control panel via web interface
- Full graphical site statistics
- 2 GB of transfers per month

Heart

\$599/yr. = \$55/month

MORE SPACE!

- Full Web and email forwarding on a second mirrored domain
- **200MB web/ftp hosting space**
- 30 POP3 email boxes
- Unlimited email addresses forwarding to multiple destinations
- **imail** (web mail)
- Unlimited email autoresponders
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Access and File Maker Pro support
- MYSQL and PHP4 support
- Own CGI-BIN
- SSL secure server facilities
- Remote control panel via web interface
- Full graphical site statistics
- 2 GB of transfers per month

\$25 from this package is contributed to charitable causes. Charities include: the Royal Flying Doctors, the Salvation Army and the Royal Life Saving Society Australia.

Enterprise

\$799/yr. = \$72/month

MORE SPACE!

- Full Web and email forwarding on a second mirrored domain
- **500MB web/ftp hosting space**
- 50 POP3 Email boxes
- Unlimited email addresses forwarding to multiple destinations
- **imail** (web mail)
- Unlimited email autoresponders
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Access and File Maker Pro Support
- MYSQL and PHP4 support
- Own CGI-BIN
- SSL secure server facilities
- Remote control panel via web interface
- Full graphical site statistics
- 3 GB of transfers per month

Reseller's Packages

all prices include GST

We offer 3 tiers of discounts for resellers, please call for more details.

Shadow Hosting. We supply you with the administration software – you become your own hosting company using our servers, bandwidth and support - available **FREE** to our Silver and Gold resellers.

Our easy to use, browser based software allows you to check availability and purchase domains, automatically create packages on our servers and administer your clients' accounts – all with no hassles and no minimum monthly package requirements. We can supply a standard system or customise to meet your needs. Give us a call and we can talk about what suits you best.

Using our Cobalt RaQ solution you get exclusive use of a brand new dedicated RaQ which enables you to host at least 250 sites from under \$2 per site per month. You control your sites using plain English and your web browser. You don't need to know Linux, Apache Sendmail or any other technical requirement normally associated with Web Hosting.

We provide and configure the RaQ - We give you a generous bandwidth allowance - You get the benefit of controlling your sites and adding new domains to your portfolio without adding further cost.

RAQ3 32MB, 10.2GB

Prepaid for a year Equivalent to :
\$4,788 - \$399 per month

RAQ4 450mhz, 128MB, 15.2GB

Prepaid for a year Equivalent to :
\$5,988 - \$499 per month

RAQ4 450mhz, 512MB, 30GB

Prepaid for a year Equivalent to :
\$10,200 - \$850 per month

Freephone: 1800 999 618

www.ilisys.com.au

www.magic-moments.com.au

All our Email and Web Hosting packages include:
daily back-ups, Smart UPS and free technical support.

Telstra is in the firing line again, this time from broadband Internet competitors.

The problem with ADSL

Telstra is under fire again, this time from competitors who want to provide DSL (digital subscriber line), or fast Internet, over ordinary telephone lines. They say that wholesale DSL prices are too expensive and that rollout of asymmetric DSL (ADSL) technology is sporadic. Some also claim that they are having problems getting Telstra to connect DSL services to households.

The number of DSL providers is increasing, as many seek to cash in on the growing need for speed. Research company IDC has predicted that, in three years' time, 2.1 million Australians will be connected to the Net through some form of DSL. This figure is much higher than the 7,000 subscribers reported just over six months ago. DSL offers a fast, permanent Internet connection that runs over a telephone line, and is being promoted as the broadband option that will be most viable for many Australians in the near future.

Many broadband providers blame Telstra for their troubles with DSL. They argue that Telstra still has too much control over the copper line network that provides telephone signals to homes. Until 1999, Telstra had a monopoly on the local call market. Other telcos could provide long-distance calls, but local calls could only be supplied by Telstra. However, pressure from telecommunications providers looking for a way into the local call market prompted the Australian Competition and Consumer Commission (ACCC) to order Telstra to give its competitors access to the local loop. Telstra's competitors could now use the copper lines to provide local call services, as well as fast data services such as ADSL.

"Without this decision, it is unlikely that such services would have been made available on a reasonable commercial basis," chairman of the ACCC Alan Fels said. Competitors could gain access to Telstra exchanges and install their own equipment — at a cost.

What price ADSL?

Resellers of DSL services (which buy wholesale from Telstra) complain bitterly about the cost, claiming that it is affecting the take-up rate of DSL services in Australia.

The most common type of DSL found in residential areas is ADSL. Telstra offers an ADSL access plan from \$73 per month, but its competitors say they need to charge no less than \$100. This makes their products viable for businesses, but less so for households. "We'd love to sell a well-priced, consumer product, but we can't yet," managing director of Netspace Stuart Marburg said. "If we could buy it cheaper, we'd sell it cheaper."

Marburg argues Netspace is paying far too much for wholesale DSL. "Anything we buy, we need to add a small margin to in order to make a profit," he said. The Victorian-based ISP hopes to launch a product suitable for residential use later in the year to boost the slow ADSL uptake.

According to a Telstra wholesale spokesperson, Telstra has 18 customers buying wholesale DSL, and another eight who have already installed equipment in Telstra's local exchanges. "There are 26 wholesale customers already offering services," she said. "It's not just Telstra's responsibility to broadband Australia. Customers want a variety of providers."

Delays and difficulties

West Australian ISP Highway 1 depends on Telstra's introduction of DSL in Perth to offer its services. Technical spokesperson Philip Jacob May said that until recently, Telstra had been upgrading telephone exchanges for DSL, moving outwards in rings. However, the rollout suddenly stopped and Telstra began upgrading exchanges in regional areas. "The rollout plan is sporadic — there's not much consistency," May said.

This has made it difficult to plan ADSL products. May also said that the cost of upgrading remote exchanges with a small number of users is not economically smart.

Telstra spokesperson Kerrina Lawrence dismissed suggestions that the part-public, part-private company had suddenly altered its rollout plans. "We are well ahead of schedule — we've upgraded more than 500 exchanges in nine months. We



have significant metropolitan coverage and strong regional coverage," she said.

In May, Telstra announced that over 70% of Australian homes and businesses had access to Telstra's broadband services, which include ADSL, cable and satellite. Two-way satellite, which eliminates the need for a local call to an ISP, will be available in late 2001. For customers in remote regional areas without any type of broadband Internet service, Telstra will offer dialup access, which was previously expensive, for the cost of a local call.

Perhaps the most damning allegations against Telstra come from Primus Internet. General manager Ash Chopra said that there is a lot of demand for its ADSL service, but the company is becoming increasingly frustrated with the lengthy delays at Telstra's end.

If a competitor wishes to offer ADSL to a customer, it must seek permission from Telstra to access the local line. "That can take more than two weeks," Chopra said. "It needs to be speedier, as it's not good customer service."

Chopra alleged that it can take up to 20 days to check if ADSL services can be supplied to a Primus Internet customer, and often Telstra then tells Primus it cannot be done. "Our customers are coming back and telling us that even though we were unable to supply them with ADSL, they were later contacted by Telstra offering its own service to them," Chopra said.

Lawrence insisted that there is no foundation for these claims. "We have regulatory rules which we operate under," she said. "We totally deny the accusation that Telstra would engage in that kind of behaviour."

Roulla Yiacoymi

LCD1530V



LCD1525M - white



LCD2010X



LCD1525M - black



LCD1810X - black



LCD1810X - white



LCD1525X



LCD1510+

Multiple Choice

No one offers you a range of LCD Monitors quite like NEC. For users who need superior image quality in a small space, the NEC MultiSync LCD monitors deliver bright, sharp screen performance in a slim, lightweight package. Select from 15", 18" and 20" models with a choice of options including multimedia, USB, adjustable height, analog and digital (DVI) connectivity and the versatility of portrait/landscape capabilities. All monitors have detachable bases to enable either wall or arm mounting. With 60% less depth and 70% less weight than a CRT monitor desk space is substantially reduced. With so many models and options to choose from, NEC provides revolutionary flexibility to meet the needs of every user.

NEC

Contact us today to arrange a demonstration NEC Australia Pty. Ltd.
Call 131 632 www.nec.com.au

Apple iBook

On the first inspection, the new iBook looks like a miniature PowerBook G4, but on closer inspection, this baby has a personality all of its own. Apple has taken some elements from its striking designer hardware range and fused them into a shimmering package with a friendly price.

The new iBook has everything that was good about the old one — only better. It's lighter, faster, cheaper, and spacier; it has more ports and a clearer screen; and most impressive of all, it looks and feels like no other notebook you've ever seen. It's encased in a clear polycarbonate plastic similar to the material used in the Cube, underlaid with a brilliant white texture. The glassy finish has already earned it the nickname 'iceBook'.

It may look like a flattened version of its award-winning (yet poor-selling) desktop cousin, but open the lid and you are struck by a gleaming imitation of the titanium used in the high-end PowerBook G4.

Apple believes the new iBook will suit "backpack or briefcase", but it's really aimed at students and home users. Almost three-quarters of a million first-generation iBooks have been sold around the world since 1999, a good many of them to Australian schools. Apple may have consigned the old iBook's curvy lines and motley hues to retrocomputing history, but this sugary-looking machine is hardly conservative, and it gives students and consumers enough computing power to mix it with their G4 friends.

The old iBook largely sacrificed power and storage for style, but its successor has the specs to challenge any midrange notebook. Apple is offering four configurations, starting with a CD-ROM drive and going through CD-RW and DVD to a CD-RW/DVD combination. All four contain a 500MHz G3 processor, which is a step up from even the fastest of the old iBooks, the 466MHz G3 Special Edition, and radically more powerful than the 300MHz G3 that the iBook made its debut with in mid-1999. Three come with 128M of RAM, but the base model (\$2,995) only comes with 64M — a miserly half of what you need to run OS X. Both OS 9 and OS X are preloaded, but to use anything except OS X and its Aqua interface on this machine would be a crime, so APC suggests that if you purchase the basic machine, you should consider an

immediate upgrade to 128M. Every model comes with a 10G hard drive, more than double that of the first iBook, and 20G is a tick-a-box option.

The best news is that for all this, you can expect to pay \$200 less than for the old iBook. Price isn't the only thing Apple has cut. At 2.2kg, the iBook is almost a kilogram lighter than its bulky predecessor. While the earlier, clam-shaped design peaked at a whopping 5.2cm thick, the new one is a uniform 3.2cm thin, and almost exactly the same size as this magazine. Ample curves might have been cool, briefly, but small and boxy is useful. APC can testify that backpacking this one around causes no pain, and small hands will make light work of the full-sized keyboard and generous 8cm diameter touchpad and large button.



The ice queen

If you were impressed by the design and construction of the PowerBook G4, you will love the iBook. Aside from its style, it has many celebrated notebook features. Battery life is rated at five hours (one less than the old iBook), with a set of LEDs on the battery module to indicate charge level. During our tests, the iBook held out for a reasonable four hours of average use with power management on the midrange setting.

The twin stereo speakers are reminiscent of the PowerBook and a huge improvement on the single speaker of old. It makes the most of the included iTunes and iMovie software, but don't expect to be blown away by the muted 16-bit stereo audio.

As with the PowerBook, the opening mechanism is a magnetic pop-out button and the eject device is now part of the keyboard — a huge improvement on the old, unresponsive button. The embedded keypad also lifts out for easy RAM upgrades, but the unit has no protruding bits waiting to be broken off. Apple claims that the rubber-mounted hard drive and magnesium frame make the iBook twice as strong as

the previous model, and the 2.5mm translucent casing feels even sturdier than the slimline PowerBook. The 1,024 by 768 resolution TFT XGA active matrix display is clearly better than the previous 800 by 600 SVGA panel, and is especially appreciated on the DVD models.

The 256K on-chip cache is unchanged, as is the iBook's less-than-spectacular gaming capacity, including an ATI Rage Mobility 128 graphics accelerator with 8M of SDRAM and AGP 2x support. Apple's standard 56K inbuilt modem and Ethernet port, with built-in AirPort antenna and card slot for wireless networking, are all there, along with two USB ports (the previous model had one) and a FireWire port, but disappointingly, there is still no PC Card slot.

A classroom-friendly feature that will be missed in the new iBook is the handy cable for the AV port. Students could plug straight in to a TV and automatically mirror their movies and presentations to the class. In its place is a conventional AC adaptor to plug an external monitor into the RGB and composite video output port. The iBook's signature handle is also a sad loss, although the new model is far better suited to slipping inside a carry case than its porky parent. APC's main gripe is the layout of the ports. Like the old iBook, all the ports are on the left side, while the power input is precariously close to the CD eject button on the right — a recipe for trips and tangles. The rear is dominated by a large hinge that sinks back at a nice angle and doubles as a ventilation outlet. The iBook is no speed demon, but neither does it burn like the G4.

Overall, the iBook really can't get much better without treading on the PowerBook's toes. The only thing left to ponder is what colour schemes Apple might slip under the clear plastic casing. Fruit Loops may have given way to Lite White for now, but APC can't wait to see what's next on the menu.

Fiona Angus

Pros Modish, sturdy and inexpensive
Cons Average memory and awkward port layout

Contact Apple
Phone 13 36 22
Online www.apple.com.au
Price \$3,395

NEO1 and SkyNetGlobal

NEO1

The NEO1 modem from dotWAP is the cure for local Palm users envious of the US-only Palm VII, which can access wireless data services in several major US cities. The clip-on backpack does add substantial bulk and weight to the slim Palm V and Vx models, but the NEO1 puts a royal flush of communications in your hand.

The included applets allow email, WAP browsing, Web clipping, SMS and — if you're desperate — access to conventional Web sites.

Even though dotWAP's packet-switched UHF data network is pegged to a peak of 14.4K, this is quite sufficient for text-based data, and APC encountered no dead spots around the Sydney CBD. According to the company, network coverage reaches 70% of the population in all major cities, except for those in Tasmania and the Northern Territory. Like a cable connection, the wireless link is always open and the modem is always on. During tests, the built-in battery lasted two full days between recharges.

The NeoMail applet allows you to send email anywhere, any time, through a dotwap.net gateway. Replies and new mail to

your dotwap.net address arrive with an alert beep and automatically open the NeoMail applet, even if the Palm is turned off — one of the joys of permanent connectivity. Attachments, along with the original message, are routed to a Web-mail system accessible from any PC. NeoMail also allows you to retrieve a copy of messages sent to any two POP-based mail servers, such as your regular ISP.

The dotSMS applet can fire short text notes to digital mobile phones (it simply looks up your Palm address book), and it can also send a single message to multiple recipients.

Where the NEO1 falls down is in areas outside dotWAP's realm of control. The odds of a successful WAP session did not seem substantially greater than on a mobile phone; APC

encountered plenty of dead-end links and time-out errors.

Web clipping, Palm's own model for delivering byte-sized chunks of data to a handheld, was more successful, but the results depend on the company behind the applet — the *Sydney Morning Herald* site was snappy, the Sydney railway timetable was not.

Cost is also a concern. A package that costs \$799 for the hardware (not including a Palm), with a \$75 connection fee and \$69 per month package for downloading up to 300K, should not come with any problems.

SkyNetGlobal

The NEO1 delivers small, slow slices of the Web almost anywhere, but SkyNetGlobal does almost exactly the opposite. The company acts as a wireless ISP, with points of presence at key city locations — its Sydney hubs include the domestic and international airport Qantas Clubs, as well as the Westin, W and All Seasons hotels. SkyNetGlobal has additional international wireless POPs, but at the time of writing, these were mostly in airport lounges in the US and New Zealand.

Each has a wireless access point with speeds up to 11Mbps. Get within range of an access point, slide an 802.11b PC Card into a notebook or Windows CE handheld — APC tested both, but as we went to print, the handheld was not officially supported.

Both the Cabletron RoamAbout card supplied as part of the SkyNetGlobal con-



NEO1

- Pros** Excellent integration with Palm handheld and OS
Solid email and SMS applets
Wide range of data retrieval options
- Cons** WAP sites, and sometimes Web clipping, can be troublesome

Contact dotWAP

Phone 1800 101 927

Online www.dotwap.com

Price Hardware from \$799, with \$75 connection fee, and \$69 a month

SkyNetGlobal

- Pros** Effortless connection
High speed
- Cons** Could be expensive if you don't use your time wisely

Contact SkyNetGlobal

Phone (02) 9410 9209

Online www.skynetglobal.com

Price From \$22 a month (12-month contract)

This month in First Take:

NOTEBOOK

Apple iBook 24

HANDHELD NET ACCESS

NEO1 and SkyNetGlobal 25

SERVER

Microsoft Small Business Server 2000 26

GROUPWARE APPLICATION

Lotus Notes Rnext Beta 1 27

CHARTING PACKAGE

Visio 2002 28

DATABASE APPLICATION

FileMaker Pro 5.5 28

3D WEB DEVELOPMENT

Adobe Atmosphere and Macromedia Director 8.5 Shockwave Studio 30

DRAWING APPLICATION

Freehand 10 34

TRACKBALL MOUSE

Microsoft Optical Trackball 34

DIGITAL CAMERAS

Kodak DX3500 and Canon IXUS 300 36

CD CREATION

Toast 5.0.1 Titanium and Easy CD Creator 5 Platinum 38

NOTEBOOK TRAY

CoolPad 40

PC EMULATORS

Virtual PC 4.0 with Windows 2000 for Mac and Connectix Virtual PC for PC 42

REMOVABLE STORAGE

PocketZip PC Card Drive 44

HANDHELD MODEM

Xircom SpringPort Modem 56 44

tract, and Xircom's new Wireless Ethernet Adaptor card worked first time, allowing APC to surf the Web and access the office network and Lotus Notes database at LAN speeds.

The included MultiNetwork Manager software allows you to toggle between your regular office network settings and SkyNetGlobal, but it is a freeware version restricted to those two environments. You have to shell out for the full version for additional settings for other locations.

David Flynn

Microsoft Small Business Server 2000

The pressure is now on for small businesses to connect office resources through the Internet to home workers, salespeople, customers and suppliers. It would be great if a single solution could securely download, sort and store the company email, efficiently distribute Web pages and run online discussion forums. And how about offering remote access while still keeping hackers at bay?

This is the promise of Microsoft's Small Business Server 2000. The ensemble includes Windows 2000 Server, SQL Server 2000 database, Exchange 2000 Server, Outlook 2000 email, Shared Modem and Fax Services, and the new Internet Security and Acceleration (ISA) Server 2000 firewall. It largely delivers on its promise to carry the Internet safely to as many as 50 users, as long as the installation is done professionally. The documentation claims the package has an integrated setup, saving small businesses time and money. This is true up to a point, but there are really four setup phases, each with powerful opportunities and traps for the inexperienced.

One of the best features is virtual private networking (VPN), which distinguishes Small Business Server 2000 from Novell's Small Business Suite. VPN creates an encrypted pipe through the Internet to the server. People can then log on with complete privacy from anywhere in the world for the cost of a local call to their ISP. It's the trickiest part to set up, but the installation manual only provides a few sentences of instructions. If your budget will stretch to it, the Small Business Server 2000 Resource Kit (\$100) does a far better job of explaining most things. This should have been included in the box, as it tells you exactly what the package can do.

Booting from the CD, everything about installing Windows 2000 for Small Business

Server 2000 is predictably easy. After that, the Small Business Server setup kicks in immediately. It wasn't smart enough to tie our SCSI disks together, even though Microsoft recommends them. Unless you've formatted them previously, the whole kit and caboodle tries to install itself on a single drive, creating a first-class information bottleneck. However, getting it right only takes a few extra clicks in the right places. Then, after making sure Small Business Server 2000 puts the data-intensive applications and their stores — email and fax — on the new amalgamated RAID 5 drive, you're away.

Thankfully, the SQL Server database is not installed by default. It's daft to place all your customer records on a machine con-

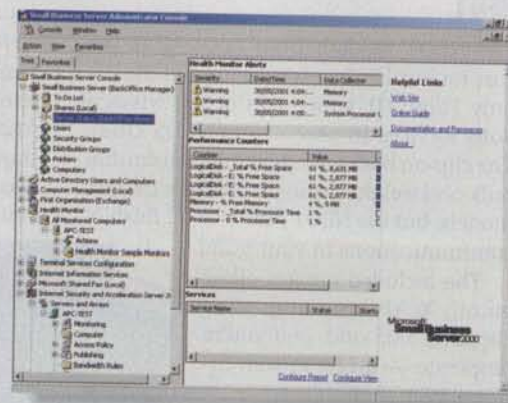


Microsoft
Small Business
Server 2000

nected directly to the Internet, even with the ISA firewall. In this context, SQL is only good for powering small Web applications. Four CDs later, you're at stage three, and this is where the fun starts. The Small Business Server has two special management consoles. One has all the important daily administration tasks, and the other is a maze of tweaks just for technical types. The most important thing is the ToDo list, a launch pad of online help with wizards.

There are many chores to be done here before the server is ready. Depending on the components you want, a good tech could spend the best part of a day just getting to know the place. The one component missing from Small Business Server 2000 that similar suites have is a virus checker. Microsoft's manual also makes no bones about the importance of obtaining one.

The final phase of setup is installing Small Business Server 2000 client software on all the target desktops. This looks easy, but it can quickly get out of hand. To set up



▲ Don't worry — it's not as complicated as it looks.

computers for people to work on, you need to make a list of the applications you want them to have — anything with a setup program — and then create the network setup floppy from this. The network settings were created quickly by the floppy on all of our test machines — an administrator's dream come true, really. However, installing applications was tough. For example, if the target drive is full, you have to start moving files all over the place, because setup doesn't offer alternative locations. Windows 98 also asked lots of 'Do you want to delete this file?' questions, and the installer got Outlook confused with a local copy of Office Premium and demanded both Office and Windows CDs to continue. Small Business Server 2000 also forgot to create shares to make the extra applications required available, generating a few error messages.

However, once the system's up, it's up for good. Small Business Server 2000 is reliable and fast — much better than its NT-based predecessor. Administrators using Terminal Services can now run the system from anywhere. Often alarms will go off before things go wrong, and by using the management console, power users can do almost everything for themselves with relative ease.

Eric Wilson

Pros Detailed, reliable and powerful Net server

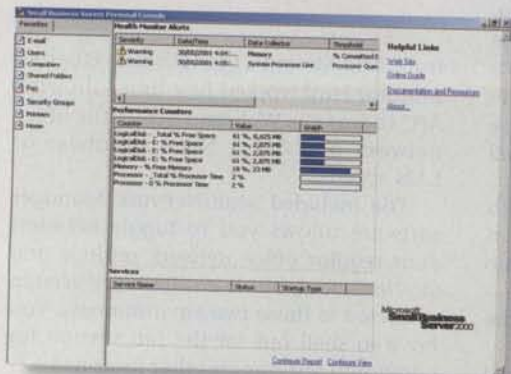
Cons Fiddly to set up

Contact Microsoft

Phone 13 20 49

Online www.microsoft.com

Price \$2,850



▲ The Small Business Server 2000 console

Lotus Notes Rnext Beta 2

As APC is a Lotus Notes bastion in a company that mainly uses Microsoft Exchange, the Rnext Beta 2 release of Lotus Notes has stirred up as much interest here as the Gold release of R5 did.

Other than the ability to multitask while checking mail and opening databases, most of the changes to the Notes Client involve upgrades to the user interface. Those of you who lived through the drastic changes to the Notes client in the great R5 migration can relax — these improvements genuinely contribute to a better application.

One of the first things you notice when you load Rnext is the new login dialog box. The familiar hieroglyphic symbols have been replaced with key chain graphics and you can now choose a different user ID and/or locations before you enter your password. This is a worthwhile addition, especially for people with a laptop. As current mobile users of R5 know only too well, changing locations usually necessitates the creation of multiple location and connection documents.

The ability to choose skins for your Notes client is definitely one of the coolest new features of Rnext. It's not currently implemented in Beta 2, but it illustrates the level of upgrade the interface has been given. The Notes client also features a redesigned Welcome Page which allows you to send Quick Notes (short emails) through a small notepad at the right-hand side of the screen and access your contacts, journal entries and reminders without having to open separate databases.

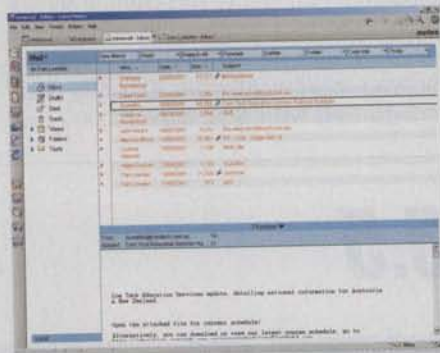
Even the humble dialog box has gone under the knife. It now has a new 'Java application' look and feel, and it's also **resizable**.

The Rnext release of Notes has two new capabilities: **roaming user** and **multiuser** support. The roaming features allow you to access your personal and interface information, no matter what PC you're

using. Information such as your Welcome Page, Bookmarks, address book, preferences, journal and ID file are stored on the server and replicated to the PC you are currently using. The multiuser feature allows a Windows-style multiple user login that configures the Notes client for each individual user.

Lotus has made a gallant move to reduce replication conflicts. In Notes Rnext, you will be able to lock and unlock documents, preventing others from modifying the document, even if they are working on a different replica. 'Super Users' and those with Editor access and above can selectively remove this feature, ensuring that documents aren't locked away forever. This doesn't mean much from a user's point of view, but it's a blessing to an administrator.

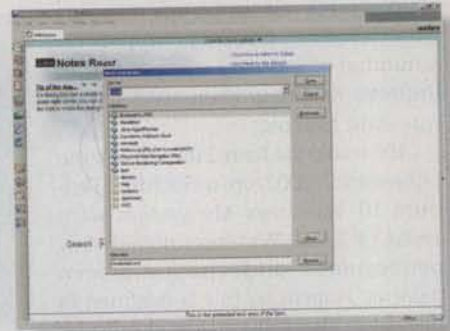
The Notes Database Designer client has also embraced many of the user interface



▲ The new look of the Mail file

upgrades, but here the transformation runs much deeper. When you open a database in Designer Rnext, you'll see a few new types of database resources. Designers can now use these new resources to include JavaScript libraries and servlets, Java Server Pages, style sheets, data connections and other files into the database. This follows an ongoing commitment by Lotus to further integrate Domino with the Web-based technologies.

You can take HTML editing further in the new version of Designer, as it follows in the footsteps of Web authoring programs such as Macromedia Dreamweaver. The Notes Rnext client and Designer both render pass-through and edited HTML. Designer also allows you to work with HTML code, either as text or in layout display mode. You just highlight the Notes representation of a table and select View, Display as HTML and the page is redisplayed. The table is replaced by the HTML code, which you can edit in the HTML



▲ Notes now has resizable dialog boxes.

pane. When you've finished, you can select it again and turn it back into a Notes table.

Designer Rnext also makes a leap forward in its ability to integrate with other applications. The new tools menu allows you to launch an application quickly from a list of external programs that you use frequently in the course of building an application. These can be third-party tools, external applications or tools you've written. You can select the tools to be available at all times when you are working in Designer or select them to be context-sensitive, so your tools appear as you select activities within Designer.

The Designer client will allow you to edit and check the syntax of your HTML, servlets, Java Server Pages and DXL (Domino XML). If you're writing some form of script programming (Lotus or Java) to run in a Notes client, you can now opt for it to be client specific in its execution. For example, if you're writing JavaScript for a browser, you can choose to run the JavaScript only on a Web client. Now you can write different code for the same event — JavaScript for the Web and LotusScript for the Notes client. **Support for JavaScript in the Notes client is still integrated.**

The Beta 2 version of Rnext augurs well for the Gold release. If the final build lives up to expectations, the next installation of Lotus Notes will be worth investing in.

Dan Lowden



▲ There are extra resources in Domino Designer.

Pros Great new features
Major improvements to the user interface

Cons None at this beta stage

Contact Lotus Development
Phone 13 62 52
Online www.notes.net
Price TBA

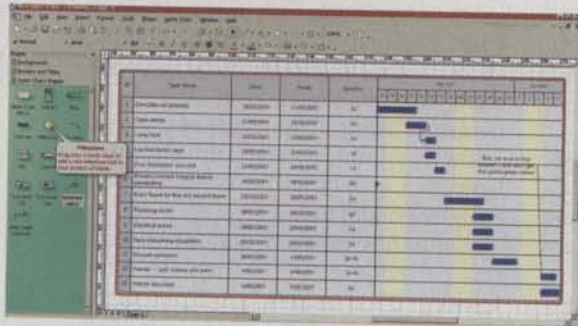
Microsoft Visio 2002 Beta 2

Visio's latest release brings it in line with Office XP, and adds support for a number of industry standards that improve its integration with corporate data sources.

APC tested the Beta 2 release of Visio Professional 2002 on a 500MHz Pentium III Windows Me system with 160M of RAM. We encountered slow performance and choppy screen redraws. Hopefully, this is confined to the beta. The full version should be available by the time you read this.

An expanded array of prebuilt intelligent shapes is included, due to Microsoft's decision to combine Visio Technical and Visio Professional. There are now 14 major shape categories, which cover a broad range of areas from electrical engineering to building plans.

Objects are designed intelligently, with a great deal of attention paid to their function. For example, try to start a Gantt-chart task over a weekend and Visio will automatically snap to the first Monday afterwards. Drag a window to a wall on a building plan and the wall opens up to



accommodate it. All objects can be rotated, scaled to fit and labelled as necessary.

Microsoft has introduced templates for documenting Active Directory, LDAP and NetWare directory services. Another useful template allows companies to generate charts to manage the structure of Web sites, and the system provides reporting to quickly spot problems such as broken links.

The Visio Network Tools addition repackages an earlier subscription service from Visio that continually updates the package with shapes that represent new network equipment. Visio 2002 also offers integration with SQL Server 2000 and

other data sources, allowing the system to produce equipment lists and tie asset registers into visual diagrams more easily.

Visio 2002 also incorporates support for XML data sources and includes an option to automatically publish interactive charts to HTML pages.

Visio 2002 is an evolutionary rather than revolutionary upgrade. Its price and system requirements mean it isn't a compelling upgrade if you are happy with Visio 2000, but it is a good investment for power users.

David Braue

Pros Easy-to-use, broad range of shapes and data integration

Cons Not a 'must-have' upgrade

Contact Microsoft

Phone (02) 9870 2200

Online www.microsoft.com.au

Price Standard, \$426; Professional, \$1,072

FileMaker Pro 5.5

FileMaker remains the main competition for Microsoft's Access in the small business database market. FileMaker Pro 5.5, the first major update to the original product in 18 months, features a number of additions designed to appeal to those in larger networked environments.

APC tested the final release of the Windows version, which has been certified for Windows 2000, as well as Windows 95, 98 and Me. The application is also one of the first to be available for Mac OS X, while a Linux version is planned for 2002.

The most significant addition for businesses is enhanced support for ODBC (Open Database Connectivity) for data import and export. While ODBC queries have been supported in a limited fashion since version 4.1, FileMaker 5.5 can now send data to other ODBC sources just by enabling the Data Access Companion (with one click) within any individual database. The Mac OS X release doesn't allow ODBC import, but can act as an ODBC server.

The other key enhancement is support for executing SQL queries within FileMaker's scripting language, which



combines with the ODBC support to allow workgroups to both import and export data to a wide variety of other applications. Other additions, which are largely of interest to workgroups sharing data, include record-level security, the ability to restrict the length of input on data entries, and the ability to prevent people from creating new databases or changing their passwords.

A more generally useful enhancement is the ability to import only named ranges from Excel spreadsheets. This can be useful when dealing with complex spread-

sheets with multiple headers or data areas. QuickTime files can also now be added to records.

The standard Pro version of FileMaker 5.5 restricts Web access to databases to 10 unique IP addresses within a 12-hour period. Large user numbers require the Unlimited release, which is due out later this year at a cost of \$1,914.

The increased ability to interact with data from other sources indicates a continued use for the product at the workgroup level, and it remains the most straightforward system for individual database development.

Angus Kidman

Pros Improved file export options
Tighter integration with Office

Cons Unlikely to displace larger systems

Contact FileMaker

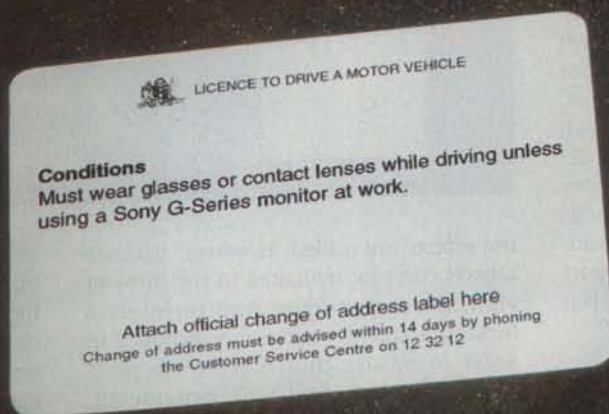
Phone 1800 028 316

Online www.filemaker.com.au

Price \$482.90; Upgrades, \$284.90

SONY

FNL SCW1434VC



Sitting in front of a screen all day can really take its toll on your eyes. The brighter, ultra-sharp images produced by Sony's latest FD Trinitron technology mean you'll never get tired of looking at a G-series monitor. www.sony.com.au or phone 1300 13 7669. **It's a Sony.**

Available in 19" (CPD-G420) and 21" (CPD-G520).



War of the 3D worlds

The notion of 3D Web sites that are navigated in a similar fashion to a console game is not a new one; dedicated enthusiasts have been experimenting with technologies such as VRML (virtual reality modelling language) for years. The failure of these sites can be attributed to three main factors: the extreme difficulty of building convincing 3D environments; a lack of support for such technologies in standard browsers; and a lack of compelling reasons to switch from a 2D to a 3D environment.

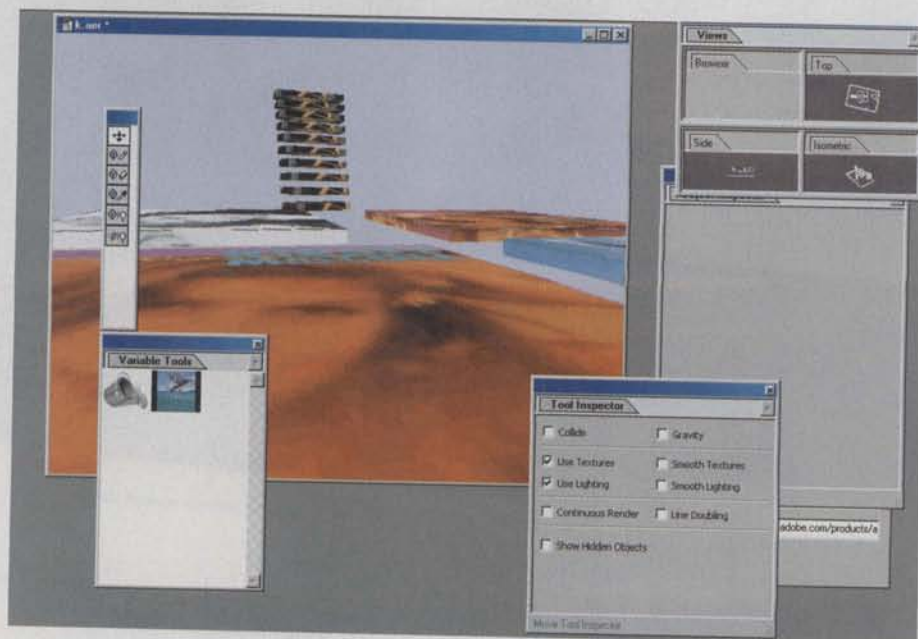
Adobe and Macromedia are both pitching their latest products as the solution for developers trying to build convincing 3D worlds that people can interact with online. Adobe has opted for a standalone product, Atmosphere, which is aimed at developing 3D Web applications. Macromedia has added 3D manipulation capabilities to its Director suite, which can be used to build both standalone software and 3D Web site add-ons. Both companies have strong support in the Web developer community, but which has done the better job?

Adobe Atmosphere

Atmosphere comprises two parts: a builder application for constructing 3D Web environments or 'worlds', and a freely available browser add-on to allow people to move through those worlds. APC reviewed an early beta of the product for Windows. The commercial release for Windows and Mac is scheduled for the second half of the year.

The interface for the builder application closely resembles that of other Adobe graphics tools such as Photoshop (but the beta was lacking copy and paste commands, and offered no standard undo function). To begin creating a world, elements such as walls, stairwells and columns are dragged on to the workspace from the Variable Tools palette, repositioned and resized. A wide variety of object properties can be manipulated using Adobe's familiar palette interface. These objects behave intelligently, so stairs, for instance, are 'climbed' automatically when you move across them.

Atmosphere offers top, side and isometric views of the wire frame models used to create worlds, as well as a browser preview mode that shows what the world will look like. It's here that colours and textures (which can be created in any graphics program) are inserted and light-



ing effects are added. However, because objects can't be relocated in the browser view, developers may find themselves flicking frequently between viewpoints in order to ensure that objects are positioned correctly and look convincing. This is a fiddly process, but it works as well as can be expected within the constraints of a 2D screen. Another minor grumble is that texture palettes aren't saved for each world, so you need to reload textures into the system if you decide to reuse them in the same world in a subsequent session.

Once a world has been created, it can be published, a process which essentially involves bundling up the graphics and interface definitions so they can be transferred on to the Web server. No special server software is required, but you need to download the browser to make use of the 3D environment.

The basic Atmosphere browser allows individuals to navigate through worlds that have been exported to a Web server, using conventional arrow-key or mouse controls. The browser also provides basic chat functions. These are currently hosted on an Adobe-maintained server, but you can define the maximum number of participants within a given world. The browser offers control over whether gravity and collision rules apply within the world, but switching off either can quickly result in disorientation.

If you want to add other interactive features to the objects in a world, you need to use JavaScripts associated with each

object. This provides commendable flexibility for programmers who can create highly sophisticated behaviours, but basic and obvious tasks, such as making an object visit a given URL when you click on it, are made more difficult than necessary.

The slick builder interface makes creating basic sites relatively easy, but developing a convincing 3D Web site still remains a challenging task. Atmosphere is designed according to the assumption that most of the visual elements of the world will be created in an external application and then imported, so there's **virtually no assistance offered within the program** to make worlds convincing, beyond a few predefined routines such as attaching four walls to a floor.

A library of sample textures and predefined common objects would be a welcome addition for beginners. The variable tools palette allows you to import additional objects, suggesting that Adobe may be leaving this market to third-party developers. Worlds can also be exported into the XML-based Viewpoint format, so that Atmosphere can integrate with other 3D tools.

Pros Easy creation of 3D environments
Cons Lack of interactivity

Contact Adobe
Phone 1300 550 305
Online www.adobe.com.au
Price TBA

Get around faster with our cable Internet.



Insert the attached CD to discover how fast you can get around the Internet using our high-speed cable. It can be up to 100 times faster than a standard dial-up connection when surfing local websites and up to 30 times faster surfing international sites.* And there's no dialling up so whenever your

computer is on you're automatically online. Paying for it is easy too with a flat monthly fee and a one-off installation charge.* So to find out how the Internet was meant to be insert CD.

If the CD is missing call 1800 555 609 or go to www.optushome.com.au

OPTUS@Home
High-speed cable Internet

*Comparison is based on the maximum speed possible on a 28.8kbps modem and actual tests performed on the Optus@Home network. Speed can vary depending on your computer's configuration and capacity, the capability and load on the sites visited, the variable nature of the Internet and amount of simultaneous usage on the Optus@Home network. *Optus@Home is available in Optus cabled areas in Sydney, Melbourne & Brisbane. For technical and commercial reasons not all homes can be connected to the Optus cable or service. The Optus@Home service is subject to the Customer Terms and Acceptable Use Policy available from www.optushome.com.au/obligations.html Optus@Home is a trade mark of Excite@Home Australia Pty Ltd.

OPH5534/PolarB/PCU



Macromedia Director 8.5 Shockwave Studio

Director approaches the problem of developing 3D sites from almost exactly the opposite position to Adobe Atmosphere. It focuses on developer tools to allow interaction within a world and almost entirely downplays the actual building of the world's content objects. APC reviewed the final release of the product for Windows; a Mac version is also available, and both can be used to deploy platform-independent Web content.

With no built-in construction tools, Macromedia is promoting partnerships with a number of third-party model companies, and encouraging developers of existing 3D modelling tools to add export features compatible with Director to their product. Objects can be imported in Macromedia's preferred W3D format and the more widely used OBJ. There is also support for basic 3D primitives in new extensions to the Lingo scripting language used in Director, but this isn't much comfort for beginners.

What Director does offer is finetuned control over how objects within a 3D environment behave. Existing users will easily adapt to the new release, which adds 3D behaviours to those available in the existing behaviour library. Beginning developers can just drag the behaviours they require on to existing cast members and then customise them. More advanced developers can use new Lingo commands (more than 300 have been added) to control everything from lighting to rotation to available keyboard or mouse commands, as well

as all the features available in previous versions.

For basic behaviours, Director is easier to use than Atmosphere's JavaScript; even beginners can build quite advanced 3D interactions without the need to touch any underlying code. For more complex behaviours involving Lingo, the difference isn't as noticeable, but Director's slick editing environment makes it easier to coordinate multiple tasks than the equivalent method of attaching JavaScript to objects in Atmosphere.

Once completed, 3D-enabled sites can be published in the same way as earlier versions of Director, and then become available to any browser with a current version of the Shockwave plug-in. Behaviours are associated with the world by the developer, so there's no standard means of navigating (as there is with Atmosphere). This has its advantages, as it means you can limit responses to a set range of behaviours (such as zooming in and out, or rotating an object) and have more control over the final rendering of the site.

Developers can set the level of visible 3D detail and choose whether to render

using the built-in renderer, DirectX or OpenGL. Macromedia has also licensed Intel's Internet 3D Graphics technology to allow Shockwave content to adapt automatically to the available processing power on a given system.

As well as the major addition of 3D to Director, the product has a number of other new features. These include support for server-side scripting in Shockwave's Multi-user Server and enhanced support for Real-Audio file formats.

So who wins?

It's difficult to make completely fair comparisons between the two products because of their contrasting approaches. Both perform well in their respective fields, but neither has created a system where a beginner can deploy effective 3D environments rapidly without lots of careful planning. As it stands, it doesn't seem possible to export objects from Atmosphere into Director. This is a pity, as the combination would be ideal.

In terms of ease of use, both still fall some way behind other releases from the same stables (particularly Dreamweaver for Macromedia and Photoshop for Adobe). It's also worth noting that 3D rendering is a processor-intensive task that can strain even quite recent systems. There were noticeable delays in both products when previewing 3D environments.

Director has a clear starting advantage, as most surfers will want the Shockwave plug-in for applications other than 3D sites. This could lead to greater initial acceptance of Macromedia's technology. However, for rapidly developing entire worlds, Atmosphere has an edge, and its sites appear to load more quickly. When it comes to adding interactivity, both require detailed programming knowledge, which partially limits their appeal. It seems likely that 3D sites will need to be better established before anyone attempts to develop a programming-free approach.

For sites already using Shockwave, extending into the world of 3D won't be a big leap; the basic development environment remains unchanged. However, beginners might not be convinced to jump on board, especially as loading times (already the greatest problem for Shockwave sites) can increase substantially.

People wanting a less technical environment may be drawn to Atmosphere, but the lack of interactivity could be a concern. Going 3D may still be too bold a step at this time for the home Web site enthusiast, but the day is clearly coming.

Angus Kidman

Pros Fine control of 3D behaviour
Cons Developing actual worlds is difficult

Contact Scholastic Australia; Firmware Design

Phone 1800 665 774; 1300 369 951

Online www.macromedia.com

Price \$2,495; Upgrades: \$519 (from Director 8), \$999 (from Director 5-7)



SOLUTIONS IN STEP WITH **YOUR SMALL BUSINESS**

JUNE/JULY 2001



THE IBM THINKPAD® A21e

\$3,099*

**PURCHASE A THINKPAD® A SERIES
(SELECTED MODELS) AND RECEIVE
A FREE 64MB MEMORY UPGRADE¹
AND 8MB USB MEMORY KEY², VALUED
AT \$178,³ WHILE STOCKS LAST.**

THE IBM NETVISTA™ A20
STARTING FROM

\$1,399*

**PICTURED IS MODEL
NUMBER 6270-TAA
\$2,195.***



DIRECT TO **YOU**

1300 134 075

Or, visit **ibm.com/au/smallbusiness/offer2** to buy direct from IBM or to find your nearest reseller. Lines open Monday to Friday 7.30am to 7.00pm EST. **Leasing now available** – offers end 31 July 2001 or while stocks last.





IBM ThinkPad® Notebooks

In the office, on the road and anywhere in between.

Go wherever business takes you with IBM's impressive range of ThinkPad® notebooks. Each one is remarkably affordable, even for the smallest business. Our current models feature bright, clear Active Matrix TFT displays up to 15" with up to 4.9 hours battery life. The ThinkPad® is also ultra portable, starting from just 1.6kg light and measuring 33.1mm slim. Making it the ideal machine for frequent small business travellers.



A21e	A22m	T22	X21
Model # 2655-23A Value-for-money desktop alternative. Mobile Intel® Celeron™ processor 650MHz 64MB RAM/ 20GB HD 12.1" Active Matrix TFT Display Weighs 2.5kg 24x CD-ROM 56K Modem and 10/100 Ethernet Card Microsoft® Windows® 98 Lotus SmartSuite® 1-year warranty with express repair, pick up and delivery ⁴ FREE: Purchase this ThinkPad® A Series and receive a free 64MB RAM¹ upgrade and 8MB USB Key² while stocks last. Offer Code: INO51	Model # 2628-PSA All-in-one high-performance desktop alternative. Mobile Intel® Pentium® III processor 800MHz 64MB RAM/10GB HD 15" Active Matrix TFT Display Weighs 2.9kg 24x CD-ROM 56K Modem and 10/100 Ethernet Card Microsoft® Windows® 98 Lotus SmartSuite® 1-year warranty with express repair, pick up and delivery ⁴ FREE: Purchase this ThinkPad® A Series and receive a free 64MB RAM¹ upgrade and 8MB USB Key² while stocks last. Offer Code: INO52	Model # 2647-4EA The next generation of the ultra-portable. Mobile Intel® Pentium® III processor 900MHz 128MB RAM/20GB HD 14.1" Active Matrix TFT Display Weighs 2.15kg 8x DVD-ROM 56K Modem and 10/100 Ethernet Card Microsoft® Windows® 98 2nd Edition Lotus SmartSuite® Titanium Composite Cover 3-year warranty with express repair, pick up and delivery ⁴ Offer Code: INO53	Model # 2662-64M The ideal balance of performance and portability. Mobile Intel® Pentium® III processor 700MHz 128MB RAM/20GB HD 12.1" Active Matrix TFT Display Weighs only 1.6kg 4.9 hours battery life 56K Modem and 10/100 Ethernet Card Microsoft® Windows® 98 2nd Edition Lotus SmartSuite® Titanium Composite Cover 3-year warranty with express repair, pick up and delivery ⁴ Offer Code: INO54
\$3,099* Lease from \$30.39 ³ per week	\$4,199* Lease from \$39.73 ³ per week	\$6,499* Lease from \$56.99 ³ per week	\$4,699* Lease from \$43.38 ³ per week

ThinkPad® Option Packs & Upgrades

A21e, A22m: upgrade to a 2-year express repair, pick up and delivery warranty ¹ \$232* Part # SPAC164	ThinkPad® Li-Ion System Batteries from \$299* Part # 02K6743	ThinkPad® Port Replicator \$309* Part # 02K8667	128MB RAM Upgrade \$145* Part # 20L0255	ThinkPad® 72W AC Adaptor \$115* Part # 02K6708	IBM 1GB Microdrive \$989* Part # 07N557
---	---	--	--	---	--

Option Pack

Purchase a ThinkPad® Port Replicator OR a spare Li-Ion System Battery & receive a spare AC Adaptor at no additional charge – valued at \$115.² Call for further details. Part # 02K6708

Selected ThinkPad® models are available with Microsoft® Windows® 2000 for an extra \$200*.

ThinkPad® A Series Bonus

Purchase a ThinkPad® A Series (selected models) and receive a FREE 64MB RAM¹ upgrade and 8MB USB Key² while stocks last.

ThinkPad® T Series

BusinessWeek, December, 2000 – "The Best Product of 2000"

ThinkPad® X20 37M

PC Magazine Australia, March, 2001 – "Five out of five"

DIRECT TO YOU

1300 134 075

ibm.com/au/smallbusiness/offer2

IBM NetVista™ Desktops

Small Business solutions for everyday challenges.

When it comes to managing day-to-day small business needs, IBM's vast selection of desktops provides all you could want. Simple to set up and use, these secure and dependable NetVista™ A Series models feature powerful Intel® processors. Selected models also come with productivity-enhancing applications like Microsoft® Office. All at the right price for small business.



NetVista™ A20 Micro Tower
and 15" E54 Monitor

A20	A20	A20	X40
<p>A20 Small Form Factor + 15" E54 monitor (beige model, not pictured) Model # 6266-H2A + 6331-02S</p> <p>Meets fundamental business computing needs without compromising your budget.</p> <p>Intel® Celeron™ processor 766MHz 64MB RAM/10GB HD 48x CD-ROM 15" CRT Monitor 10/100 Ethernet Card</p> <p>Microsoft® Windows® 98 Second Edition 3-year* limited warranty*</p> <p>Offer Code: INO55</p>	<p>A20 Small Form Factor (beige model, not pictured) Model # 6266-P7A</p> <p>More processing power at an affordable price.</p> <p>Intel® Pentium® III processor 866MHz 128MB RAM/10GB HD 48x CD-ROM FREE 15" E54 CRT Monitor 10/100 Ethernet Card Microsoft® Windows® 2000 3-year* limited warranty*</p> <p>Offer Code: INO56</p>	<p>A20 Micro Tower + 15" E54 monitor Model # 6270-TAA + 6331-42S</p> <p>The complete small business desktop.</p> <p>Intel® Pentium® III processor 866MHz 128MB RAM/10GB HD 48x CD-ROM 15" CRT Monitor 56K Modem with 10/100 Ethernet Card Microsoft® Windows® ME Microsoft® Office 2000 SBE included 3-year* limited warranty*</p> <p>Offer Code: INO57</p>	<p>NetVista™ X40 All-In-One (not pictured) Model # 6643-23A</p> <p>Powerful computing in a bold, space-saving design.</p> <p>Intel® Pentium® III processor 866MHz 64MB RAM/30GB HD 24x CD-ROM 15" Integrated TFT Flat Panel Monitor 10/100 Ethernet Card Microsoft® Windows® ME 3-year* limited warranty*</p> <p>Model # 6643-24A available with 128MB RAM and Microsoft® Windows® 2000 for \$4,299*</p> <p>Offer Code: INO58</p>
\$1,399* Lease from \$14.53 [^] per week	\$1,899* SAVE \$349** Lease from \$19.28 [^] per week	\$2,195* SAVE \$254** Lease from \$22.29 [^] per week	\$3,999* SAVE \$400** Lease from \$37.84 [^] per week

NetVista Upgrades

Firewire Card \$239* Part# 19K5790	64MB RAM Memory Upgrade \$99* Part# 33L3071	128MB RAM Memory Upgrade \$189* Part# 33L3073	Upgrade to a 17" CRT Monitor (not available on X40) \$100* Part# 6332-03S (beige) Part# 6332-J3S (black)	16x DVD-ROM (not available on X40) \$350* Part# 10K3574	48x IDE Internal CD-ROM (not available on X40) \$135* Part# 33L5001	Upgrade to a 3-year, 4-hour response on-site warranty* \$197* Part# SPAC156
---	--	--	--	---	---	--

IBM NetVista™ Thin Client with Turbo Linux Model # 8363-LAP + 6331-42S

Easy set up and install with no initial server set up required. Offers centralised server-based management and access to a fast growing number of LINUX applications. Comes with 233MHz processor, 32MB RAM, E54 15" CRT Monitor and 3-year limited warranty* **\$1,499***

A60 Microtower with Intel® Pentium® 4 processor available from \$2,895* (monitor not included).

NetVista™ Bonus

Purchase a NetVista™ A20 (Model # 6266-P7A) and get the 15" E54 beige monitor* FREE, while stocks last.

NetVista X40

PC World, September, 2000 – "Best Buy In Business"

NetVista X40

PC Magazine, August, 2000 – "Innovative PC Award"

IBM PCs use genuine Microsoft® Windows®
www.microsoft.com/piracy/howtotell



Call **1300 134 075** to buy direct from IBM or to find your nearest reseller*

IBM @server xSeries



xSeries 230

Providing the backbone of e-business.

The IBM @server xSeries family was created specifically to help small business tackle the demands of e-business. Delivering a fully scalable and robust foundation, these Intel® processor-based servers provide an integrated approach to building reliable e-business infrastructure using hardware, software and services. Simple to set up, operate and upgrade, IBM eServers make light work of executing the many facets of a successful e-business.

xSeries 200	xSeries 220	xSeries 230	xSeries 330
<p>Model # 8478-61X (not pictured)</p> <p>Entry level IBM eServer. The processing power for a small business with minimum downtime.</p> <p>Intel® Pentium® III processor 933MHz 256KB Level 2 cache 64MB SDRAM 20GB IDE Hard Drive 48x – 20x CD-ROM 1.44MB Floppy Disk 10/100 Ethernet Integrated</p> <p>3-year limited on-site repair warranty⁷</p> <p>Offer Code: INO59</p>	<p>Model # 8645-41X (not pictured)</p> <p>Leading technology offering powerful 2-way performance in a small package.</p> <p>Intel® Pentium® III processor 933MHz (Dual processor capable) 256KB Level 2 cache 128MB RAM (expandable to 4GB) 48x CD-ROM 1.44MB Floppy Disk 10/100 Ethernet Integrated</p> <p>Diagnostic LEDs for easy troubleshooting</p> <p>3-year limited on-site repair warranty⁷</p> <p>Offer Code: INO60</p>	<p>Model # 8658-61Y (not pictured)</p> <p>The right blend of price and performance for departmental serving. Room to grow as your business does.</p> <p>Intel® Pentium® III processor 1.00GHz (Dual processor capable) 256KB Level 2 cache 128MB RAM (expandable to 4GB)</p> <p>6 Hotswap Hard Drive Bays</p> <p>Light path diagnostics (to easily troubleshoot key system components) Ultra 160 SCSI controller 10/100 Ethernet Integrated</p> <p>3-year limited on-site repair warranty⁷</p> <p>Offer Code: INO61</p>	<p>Model # 8654-51Y (not pictured)</p> <p>Ultra thin 1U rack server – perfect for space optimisation without compromising performance.</p> <p>Intel® Pentium® III processor 1.00GHz (Dual processor capable) 256KB Level 2 cache 256MB RAM (expandable to 4GB) 2 Hotswap Hard Drive Bays</p> <p>Light path diagnostics (to easily troubleshoot key system components) Ultra 160 SCSI controller Dual 10/100 Ethernet Integrated</p> <p>3-year limited on-site repair warranty⁷</p> <p>Offer Code: INO62</p>
<p>\$1,999* <small>SAVE \$800**</small></p> <p>Lease from \$20.76[^] per week</p>	<p>\$2,799* <small>SAVE \$300**</small></p> <p>Lease from \$27.45[^] per week</p>	<p>\$4,199* <small>SAVE \$600**</small></p> <p>Lease from \$39.73[^] per week</p>	<p>\$4,499* <small>SAVE \$100**</small></p> <p>Lease from \$42.57[^] per week</p>

@server Upgrades

<p>x200</p> <p>128MB 133MHz ECC SDRAM DIMM</p> <p>\$235* Part # 33L3081</p>	<p>x200</p> <p>IBM 20.4GB ATA-100 (EIDE) HD</p> <p>\$495* Part # 19K4461</p>	<p>x200</p> <p>Upgrade to a 4-hour response, 3-year limited on-site warranty⁸</p> <p>\$345* Part # SPAC276</p>	<p>x220</p> <p>xSeries 128MB 133MHz ECC SDRAM RDIMM</p> <p>\$379* Part # 33L3142</p>	<p>x220</p> <p>IBM 18.2GB 7200rpm Ultra 160 SCSI HD</p> <p>\$699* Part # 00N8205</p>	<p>x220</p> <p>Upgrade to a 4-hour response, 3-year limited on-site warranty⁸</p> <p>\$345* Part # SPAC276</p>
<p>x230</p> <p>IBM 128MB 133MHz ECC SDRAM RDIMMII</p> <p>\$379* Part # 33L3123</p>	<p>x230</p> <p>IBM 18.2GB 10K-4 Ultra 160 SCSI Hot Swap HD</p> <p>\$945* Part # 37L7205</p>	<p>x230</p> <p>Upgrade to a 4-hour response, 3-year limited on-site warranty⁸</p> <p>\$837* Part # SPAC278</p>	<p>x330</p> <p>IBM 18.2GB 10K-4 Ultra 160 SCSI Hot Swap HD</p> <p>\$945* Part # 37L7205</p>	<p>x330</p> <p>IBM xSeries 1.00GHz/133FSB processor</p> <p>\$2,579* Part # 10K0053</p>	<p>x330</p> <p>Upgrade to a 4-hour response, 3-year limited on-site warranty⁸</p> <p>\$837* Part # SPAC278</p>

IBM Servers

Gartner Group, May, 2000

IBM has "the most complete vision of the future of the Intel-based server market...The visionary leader in the Intel space"



IBM IntelliStation®

Solutions for your most demanding applications.

Featuring Intel® Pentium® III processors and Intel® Pentium® 4 processors, IBM IntelliStations are optimised to run some of the most demanding 2D and 3D technical, graphics and financial applications. Visit ibm.com/au/intellistation for a comprehensive listing of certified applications.



IntelliStation M Pro

IntelliStation E Pro	IntelliStation E Pro	IntelliStation M Pro	IntelliStation M Pro
<p>Model # 6846-21A + 6332-J3S (not pictured)</p> <p>Value WorkStation for all 2D Graphics requirements.</p> <p>Intel® Pentium® III processor 866MHz</p> <p>256MB SDRAM/15GB HD</p> <p>48x CD-ROM</p> <p>DVD</p> <p>17" E74 CRT Monitor</p> <p>10/100 Ethernet Card</p> <p>Microsoft® Windows® 2000 Professional</p> <p>Matrox Millennium G450 16MB Graphics Card</p> <p>3-year limited on-site repair warranty¹</p> <p>Offer Code: INO63</p>	<p>Model # 6846-47A + 6332-J3S (not pictured)</p> <p>Value WorkStation for 3D Graphics requirements.</p> <p>Intel® Pentium® III processor 1.00GHz</p> <p>512MB ECC SDRAM/91GB</p> <p>Ultra 2 SCSI HD</p> <p>48x CD-ROM</p> <p>DVD</p> <p>17" E74 CRT Monitor</p> <p>10/100 Ethernet Card</p> <p>Microsoft® Windows® 2000 Professional</p> <p>NVIDIA GeForce 2MX 32MB Graphics Card</p> <p>3-year limited on-site repair warranty¹</p> <p>Offer Code: INO64</p>	<p>Model # 6849-21A + 6551-63S</p> <p>Extreme processing power for financial applications. Dual monitor support.</p> <p>Intel® Pentium® 4 processor 1.50GHz</p> <p>512MB ECC RDRAM/18.2GB</p> <p>Ultra 2 SCSI HD</p> <p>48x CD-ROM</p> <p>19" professional stealth black CRT Monitor</p> <p>10/100 Ethernet Card</p> <p>Microsoft® Windows® 2000 Professional</p> <p>Matrox Millennium G450 16MB Graphics Card</p> <p>3-year, 4-hour response limited on-site repair warranty¹</p> <p>Offer Code: INO65</p>	<p>Model # 6868-76A + 6551-63S</p> <p>Extreme 3D WorkStation for demanding graphics, CAD and financial applications.</p> <p>Intel® Pentium® III processor 1.00GHz</p> <p>512MB ECC RDRAM/18.2GB</p> <p>Ultra 2 SCSI HD</p> <p>48x CD-ROM</p> <p>19" professional stealth black CRT Monitor</p> <p>10/100 Ethernet Card</p> <p>Microsoft® Windows® 2000 Professional</p> <p>nVidia Quadro 2 MXR</p> <p>3-year, 4-hour response limited on-site repair warranty¹</p> <p>Offer Code: INO66</p>
<p>\$3,999* SAVE \$284**</p> <p>Lease from \$37.84[^] per week</p>	<p>\$4,999* SAVE \$917**</p> <p>Lease from \$46.14[^] per week</p>	<p>\$7,499* SAVE \$1,029**</p> <p>Lease from \$65.76[^] per week</p>	<p>\$7,999* SAVE \$2,128**</p> <p>Lease from \$70.15[^] per week</p>

IntelliStation Upgrades

E Pro and M Pro
Upgrade to a 3-year, 4-hour response on-site warranty¹
\$299*
Part # SPAC202

E Pro and M Pro
19" P Series Monitor
\$1,299*
Part # 6551-63S

E Pro and M Pro
21" P Series Monitor
\$2,299*
Part # 6552-63S

E Pro and M Pro
18GB SCSI Hard Drive
\$699*
Part # 00N8205

E Pro
128MB ECC SDRAM Upgrade
\$169*
Part # 33L3081

E Pro
30GB EIDE 2nd Hard Drive
\$659*
Part # 00N8203

M Pro
2nd Processor
\$1,679*
Part # 34L5271

M Pro
256MB ECC RDRAM Upgrade
\$1,110*
Part # 33L3097



IntelliStation M Pro

AV Video & Multimedia Producer Magazine – May, 2000
"Readers Choice Award for Best Workstation"

IntelliStation E Pro

Catia Solutions – July, 2000
"Highly recommended – 5 stars out of 5"

IBM PCs use genuine Microsoft® Windows®
www.microsoft.com/piracy/howtotell

DIRECT TO YOU

1300 134 075

Or, visit ibm.com/au/smallbusiness/offer2 to buy direct from IBM or to find your nearest reseller*
Lines open Monday to Friday 7.30am to 7.00pm EST
Please quote your offer code

Options

Once you've decided on the computer or computers you need for your business, for a limited time you can purchase a number of options, some at discounted prices – all at very competitive prices. Some of the options currently available from IBM are:

15" TFT Monitor \$1,599* Part # 22P6-758 (black), Part # 22P6-759 (beige)

The IBM T540 Flat Panel colour monitor offers advanced display characteristics and a stylish, space-saving package. Has a 15" viewable image size, bright and flicker-free 1024x768 resolution that produces crisp, clear images with excellent colour. With tilt stand and analogue interface.



USB Memory Key \$99* Part # 19K4513

The IBM 8MB USB Memory Key is a solid state storage device that allows you to share data between notebook and desktop systems via the USB port without the need for a floppy disk.



UltraPort USB Digital Camera \$199* Part # 04P6135

The IBM UltraPort Camera II is an integrated camera designed to work with your new ThinkPad® T or X Series. It can swivel 180 degrees to capture video or images.



IBM Microdrive 340 MB \$569* and 1GB \$989* Part # 00N8073 & Part # 07N557

The new IBM 340MB Microdrive weighs less than an AA battery and can hold 200 times more data than a floppy disk. Its small size and capacity make it ideally suited for applications requiring portability and having high data requirements.

**Ultra Portable Data/Video Projector \$9699*** Part # 33L3406

Whisper-quiet and weighing in at 2.18kg, this is one of the world's lightest, full-featured notebook projectors. It provides XGA (1024x768) resolution and bright images (1000 lumens). Auto-sensing electronics instantly identify your ThinkPad notebook's video signal and automatically sets up the picture, allowing you to simply plug and project.



High Rate Wireless LAN Access Point \$1,379* & PC Card \$399* Part # 22P4943 & Part # 09N9904

The IBM High Rate Wireless LAN Access Point acts as a bridge between wireless-enabled notebooks and your LAN. The PC Card offers secure wireless communication through standard type II PCMCIA slots. Roam within the four corners of your building and stay connected to networked resources like printers, shared files and the web.



Printers

Z12 Lexmark Printer Part # 17E0058

\$119*

Black Z32 Lexmark Colour JetPrinter Part # 17F0495

\$199*

To match your black NetVista™ or ThinkPad®

\$549*



LEASING NOW AVAILABLE[^]

SuccessLease™ is a new leasing program for businesses and people working from home. It features the ability to trade up to new equipment during the lease as well as giving you more options at the end of the lease.

(including the opportunity to purchase at fair market value). Payments may be tax deductible^{AA} and you can arrange SuccessLeaseTM over the phone. Terms and Conditions apply. Contact IBM for more details.

Pricing: *All prices include GST and are available from ibm.com. Individual Reseller prices and offers may vary. Prices listed do not include Options unless specified, do not include delivery and are only available until 31/7/01 or whilst stocks last. This publication could contain technical inaccuracies or typographical errors. Prices accurate at time of printing. **Savings are based on IBM's standard web prices from ibm.com as at 7/4/01. Part number 20L0254.2 Part number 8K4513.3 Part number 6331-025. **Leasing:** ^Figures are based on a 36-month lease agreement. Every lease is subject to credit approval. Conditions apply A copy of the leasing rates, terms and conditions can be obtained from IBM sales representatives. Lease rates are current at the time of publication and are inclusive of GST, stamp duty and FID. SuccessLease is offered and administered in Australia by Flexicent Capital Pty Ltd (ABN 93 064 046 046), trading as "SuccessLease". ^^Purchasers using this lease program are advised to obtain independent tax advice. **Warranty:** 4. IBM will pay transportation charges for Express Repair for products located up to 100km by road from IBM's Capital City Service Centres. For products located more than 100 km from IBM's Capital City Service Centres it is the customer's responsibility to send the machine to the closest IBM Capital City Service Centre. 5. Includes 3-years parts and 1-year labour (on-site for first year). Response time is end of next business day 15' monitor includes 3-years parts and labour customer carry-in repair. Contact IBM or your Business Partner for warranty conditions. 6. Warranty and Maintenance Options for Commercial Desktops include the attached IBM monitor. On-site service in normal business hours is performed between 9am and 5pm (local time) excluding weekends and public holidays. On-site service is available within 100km of an Australian IBM Capital City Service Centre. 7. 3-year on-site warranty. On-site service in normal business hours is performed between 9am and 5pm (local time) excluding weekends and public holidays. On-site service is available within 100km of an Australian IBM Capital City Service Centre. 8. 3-years for parts only, on an exchange basis, customer carry in. 9. On-site service in normal business hours is performed between 9am and 5pm (local time) excluding weekends and public holidays with an average response time of four hours. **Trademarks:** IBM, ThinkPad, NetVista, IntelStation and the e-business logo are trademarks of International Business Machines Corporation. Intel, the Intel Inside logo and Pentium are registered trademarks and Celeron is a trademark of Intel Corporation. Lotus SmartSuite is a registered trademark of Lotus Development Corporation. Microsoft and Windows are registered trademarks of Microsoft Corporation. All other product or service names may be registered trademarks or trademarks of their respective companies. ©IBM Australia Limited 2001 ABN 79 000 024 733. All rights reserved. impic/IBMPD0622

Cut your paper use in half.

With a Brother HL-1650 duplex printer you can print on both sides of a page. By halving the amount of paper you use, you save time and money.

Double sided printing also allows you to produce slimmer, more manageable documents that are easier to carry, store and file.

With a 650 page paper capacity¹ the Brother HL-1650 can handle print jobs of all sizes. It's fast too, printing up to 16 pages per minute at 1200 dpi resolution.

The Brother HL-1650 is the only printer under \$1300² (inc GST) to offer double sided printing as standard. No other printer in its price range can offer so many features.

All of which makes the Brother HL-1650 duplex printer the smart choice when you're looking to make cuts.



Brother State Offices:

NSW/ACT: Ph: (02) 9887 4344 VIC: Ph: (03) 9899 4844
QLD/NT: Ph: (07) 3348 9266 SA/TAS: Ph: (08) 8272 1300
WA: Ph: (08) 9478 1955 www.brother.com.au



At your side.
brother®

¹ With optional tray. ² RRP. Network standard model HL-1670N also available at \$1599 RRP (inc GST).

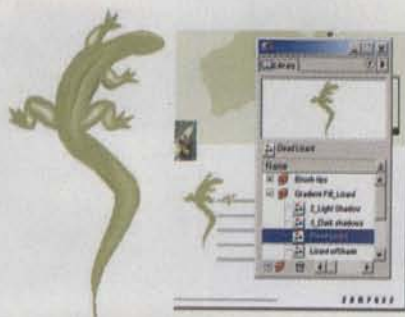
BRO31962/APC

Macromedia Freehand 10

Freehand is a vector-based drawing application used by graphic and Web designers to create 2D images such as icons, logos, maps, graphs, tables and illustrations. The main difference between Freehand 10 and drawing applications such as Adobe Illustrator and CorelDraw is that it is designed to be used in concert with other Macromedia applications.

New features in Freehand 10 include the ability to save background graphics at the same time as animations when exporting to Flash. This allows them to be used across numerous pages and minimises file sizes. Flash compatibility is also enhanced with the new ability to assign URLs to illustrations, as well as hot links. Images can be created at standard Web page sizes, and you can test your animations before you export them into Flash.

There are also several new graphics creation features, including true contour gradients for more realistic shading of objects. This feature could still use a little refinement, as you can't specify the direction the light comes from. Applying gradients is slow work, because they take some time to morph into action. This is a pity, as they are



an essential tool in adding greater realism to images.

In addition, there are new symbol-based brush and spray strokes, which allow you to make a brush from graphics you have created. The result can be a bit tacky, but it's useful if you want to reuse graphics, or for borders and repeated patterns.

The advantage of Freehand over other vector-based programs is that files can have more than one page. Version 10 extends this feature by including master pages, which allow you to store headers, footers and commonly used elements on every page. This is useful, but professional packages such as QuarkXPress and Adobe

Indesign still handle page layout more smoothly, as long as the pages aren't too heavy on graphics.

Page printing has been improved, and it's now possible to select and drag discrete areas to print.

The 3D morphing tools and perspective tools are impressive, but these features are not new to this version. What is new is the Magic Wand, which eliminates the need to trace artwork manually.

If you need to manipulate vector graphics and/or animations, Freehand is a good application. It's unlikely to replace packages such as CorelDraw and Illustrator, but it works well within a Macromedia context.

Craig Carroll

Pros Flash and Web features

Cons New drawing features need development

Contact Macromedia

Phone (03) 9853 0900

Online www.macromedia.com

Price \$959; Upgrade, \$349

Microsoft TrackBall Explorer

Microsoft's latest product for trackball fanatics is the TrackBall Explorer and it differs significantly from its predecessor, the TrackBall Optical. In contrast to that product and a lot of other recent trackballs, the Explorer is operated with the fingers, rather than the thumb. The logic behind the recent rash of thumb trackballs seems to be button-related; when you're using your index and middle fingers to control the trackball, you're left with only your more clumsy fingers and thumb, which can make clicking uncomfortable and awkward. The Explorer tries to get around this by using a more ergonomic, natural shape.

Installation and software support are good, and the device is Mac-compatible. The trackball has five buttons — two on the front, two on the left side and a wheel — all of which can be reconfigured to do different tasks. The ball can also be removed for cleaning.

Using the Explorer for the first couple of days was mildly painful, but this could



have been due to exceptionally poor past mousing habits. After this short adjustment period, the device became more comfortable than using an ordinary mouse. You only need the lightest touch to manipulate the ball. It uses a slightly upgraded version of the IntelliEye technology used in Microsoft's other optical mice, with movement sampled at 2,000 times per second.

From a games perspective, it's great for real time strategy titles, which are usually played from a top-down perspective. Attempts to use it in more frantic first person shooters were a little less successful — using the buttons on the trackball becomes uncomfortable with all that frenzied action going on.

Like many other finger-controlled trackballs, the Explorer slips up in button placement. By default, both left and right buttons are located on the left side

of the mouse for thumb use. It's slightly unnatural to use your thumb in this way — especially when used with the scroll wheel — and extended use can cause pain. Using the right button also requires you to move your thumb slightly higher than is comfortable for most people. You can reconfigure the buttons so that the left and right are on the front right, which is better in the long run.

Overall, the TrackBall Explorer is another good mouse product, but the placement of the thumb buttons might be a problem for some people.

Daniel Gardiner

Pros Nice upgrade for existing trackballs
Better than thumb-driven trackballs

Cons Thumb buttons can be uncomfortable
Expensive

Contact Microsoft

Phone 13 20 58

Online www.microsoft.com/hardware

Price \$159.95

Name	Department	Location
Melnick	A-1	15
Macela	F-5	2
Sailor	F-8	3
Buller	G-13	2
Gray	B4	8
Staz	H5	7
Spencer	B2	4
Winters	A4	13
MARTIN	B1	8
Wimmer	B4	9
O'Neill	C-3	3
Salgado	G10	2
Murphy	F-3	9

Name	Department	Location
Betsy Anderson	D3	1
Holly Wright	F-1	2
YOU REALLY THINK I'M GOING TO OPEN THIS UP, SIGN IT, PUT IT BACK, WRITE SOMEONE ELSE'S NAME ON IT, GET UP FROM MY DESK AND PLACE IT IN A SPECIAL MAILBOX ???		

Of course not.



Adobe Acrobat 5.0 makes reliable document distribution possible.

Please, remain seated. Because new Adobe® Acrobat® 5.0 makes it easier to distribute documents—both internally and with the outside world. The full version of Adobe Acrobat 5.0 allows you to deliver documents on time, looking exactly as intended. Simply convert your documents into the universally recognized Adobe PDF format and your file is ready to e-mail or post online. Your document can be viewed, read and printed on a variety of hardware and software platforms with the free Adobe Acrobat Reader™—the one millions of users already have. Adobe Acrobat 5.0 even includes digital signature technology. Which gives you a more efficient way to make sure critical documents get signed and approved quickly. Try all that with a manila envelope. For more information or your free Adobe Acrobat Advocate CD, visit www.adobe.com.au/fullacrobat or call 1300 550 205.



everywhere
you look™

Kodak DX3500 and Canon IXUS 300

Remember how the original Palm Pilot swept all before it, with its one-button instant data synchronisation? Now digital photography is heading the same way. Kodak's new DX3500 2.2 megapixel camera uses a very similar concept: plug the camera into a docking station, press a button and everything happens automatically. All you need to do is take the photos.

When the dock is linked to its power supply and USB cable, it automatically charges the camera's NiMH batteries (you can use disposable AA or CRV3 photo batteries if you prefer), downloads images, resets the camera and files the photos away on hard disk — all at the touch of a button. In the background, the transfer software runs automatically, downloads any pictures in the camera's memory, then runs the included viewing software so you can edit or rename the images immediately. No configuring, no manual software loading.

The Kodak software complements the camera perfectly. It provides all the basic editing and correction facilities without confusing the beginner with advanced functions. If you need to get technical, there are also direct connection ports for TV and USB cables, the latter using a supplied TWAIN driver. However, having the slickest download is not much help if the images aren't great.

The shots from the macro-enabled 38mm fixed focus lens are surprisingly good. The results are very good for most outdoor and indoor normal light and flash shots on standard postcard-sized prints, but if you try to get really close or pick out fine detail in a wide landscape, things get a little blurry. The flash was well programmed and managed to avoid whiting out subjects when used for macro work. The camera has a CF memory card slot, but also boasts 8M of internal memory. Running at its best resolution (1,800 by 1,200), this yields 12 shots, but that rises to nearly fifty shots at 900 by 600. This is fine for the first-time snapper. Bootup time was an acceptable three seconds, with refresh between shots a slightly sluggish three-and-a-half seconds.

Operation is easy, with a lens shutter and on/off switch, as well as a mode

wheel on the top panel that sets shooting, playback or setup. The LCD-driven menu system operates most of the standard settings, such as card format, brightness and date/time. It has iconic and easily understandable menu options, but it doesn't feature things like white balance and exposure. It's a superb first digital camera for the price.

For those who already know their megapixels from their CCDs, Kodak's new camera is interesting but perhaps underpowered. If you need power, the new Canon IXUS 300 may suit you better. Canon's original two-megapixel Digital IXUS camera rewrote the design book with loads of style, point-and-shoot simplicity and decent image quality. Consequently, it sold like mad. However, it had a few restrictions such as reduced zoom capacity, limited image settings and a relatively short battery life.

The new IXUS 300 aims to resolve these issues, and although you pay \$400 more, the result is even tastier than the original. The lens is now a whopping 35-105mm equivalent, all shooting modes can be adjusted for image size and compression, and battery life is no longer an issue.

This is not due to a bigger battery, but to the tiniest charger you've ever seen — it will easily slip into a pocket along with the camera.

The controls are slightly more usable, with a very neat zoom button arrangement and a compact mode/power switch dial on the top panel. Operating speed is quite fast with a 1.5-second power-up time and a 2.5-second lag

between shots. There is no status screen on the top panel; instead, a display button flashes up image details and settings down the side of the viewing LCD. All the usual white balance, focus, exposure and macro settings are available, and the camera can also automatically set up panorama shots using guidelines on the screen. The other bonus the IXUS 300 has is MPEG movie capability, with the 8M CF card supplied. This can cope with up to 30 seconds of 160 by 120-pixel video. However, for viewable quality, the maximum 640 by 480-pixel setting is best, which cuts you back to a paltry four seconds — not really that useful.

The unit comes with USB link and TV



cables, as well as the usual drivers and cataloguing software, and ArcSoft's Photo and VideoImpression packages. These are decent rather than superb and don't really do justice to the camera's abilities. Image quality from the IXUS 300 is excellent; compared to early 2.1-megapixel units, the tones are smoother, jaggies are less obvious, and the sharpness is impressive, even at the limits of the zoom.

Whether the extra cost over the standard IXUS is worth it depends on your photographic requirements. In terms of conventionally formatted digital cameras, this is an excellent tool for the keen amateur. If you want control and quality, and want it in a small, stylish package, this is currently the camera of choice.

Jeremy Torr



Kodak DX3500

- Pros** Simple to use
Excellent value
- Cons** Fixed focus lens and slow refresh

Contact Kodak
Phone 1800 147 701
Online www.kodak.com.au
Price \$799

Canon IXUS 300

- Pros** Quality lens
Excellent tonal rendition
Tiny charger
- Cons** Small 8M memory card
Average ArcSoft software

Contact Canon Australia
Phone 1800 816 001
Online www.canon.com.au
Price \$1,399

Think small.



Think smart. Too many people lose money by choosing an Internet plan that gives them more hours than they need. With dingo blue Small Bytes you get 10 hours access for just \$10 a month when combined with a dingo blue Mobile or Long Distance service, or \$15 a month as a single service. Additional time is only 2.5¢ a minute (or \$1.50 an hour). The download limit is a generous 1.5GB – that's at least 3,000 images of your favourite movie star. Join dingo blue at our website, or call us today.

dingoblue.com.au 1300 555 451

Do something different. Only pay for the net time you need.

Terms and conditions of service and call charges apply. A 12 hour session limit and a 1 hour idle disconnect apply. Unused hours are not rolled over. Not for commercial use. Limit of 2 services per household.

Toast 5.0.1 Titanium and Easy CD Creator 5 Platinum

Toast is the de facto standard for CD creation on the Mac, and Toast 5.0.1 Titanium adds several valuable features, including a new, Aqua-like interface.

Toast adds Mac OS Extended to the list of supported formats. It provides more efficient storage of small files, and also makes it easier to create hybrid disks, both Mac/Windows and data/audio. Preparing MP3 CDs for portable players has also been simplified. You just drag and drop files and folders of any format onto the Toast window, optionally adjust the names and order, then click the Record button.

One of the problems with iTunes is that Apple provides support for a relatively modest range of drives. Toast, on the other hand, has extremely wide-ranging compatibility, providing greater hardware choices for iTunes users. Roxio claims compatibility with virtually all CD recorders, and even though the Iomega Predator CD-RW APC used for testing didn't appear on the list of supported drives, Toast identified it as a ZipCD 650 and it worked just fine. Unlike other versions of Toast, Titanium supports DVD writers and DLT drives. DLT is used to carry CD images destined for commercial mastering, so it's only important to a few people.

Toast 5 Titanium also includes a plug-in that allows you to produce video CDs directly from iMovie, which is very convenient if your relatives own VCD players or VCD-compatible DVD players. Rendering times are protracted: about 90 minutes for the six-minute movie we turned into a VCD. Any QuickTime movie can be converted to VCD using Toast.

Another of Toast's advantages is the ability to burn a CD in the background

while you continue to work in another application. This feature worked well for us, but Roxio warns that there is a slight risk of buffer underruns unless a burn-proof drive is used.

There are several bonus items in the package, notably CD Spin Doctor for audio recording from analog sources and cleaning up the result before burning a CD, and Discus for creating disc labels and jewel-case inserts.

At the time of testing, Toast was compatible with Mac OS 8.6 to 9.1, but not Mac OS X. An upgrade is promised in the near future.

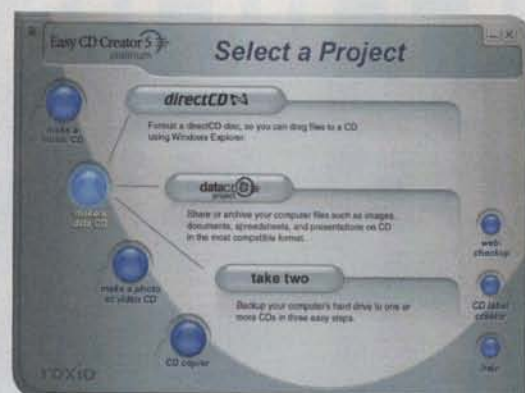
Adaptec's Easy CD Creator has always been one of the preferred choices for OEMs to include with their CD drives, and it's easy to see why. It has a host of features that should cover just about everyone's burning needs, and it's dead easy to use. The latest version, like its Toast counterpart, features a shiny new interface and lots of tweaks over its predecessor.

The audio section has been significantly improved and now offers MP3 encoding, as well as the ability to convert separate WMA, WAV and MP3 files into a single audio CD compilation. It also supports recording of audio from soundcard input, which makes it particularly easy to convert old vinyl records into flashy new CDs. The interface and functions have been streamlined, but a full range of features have been maintained.

Photo and video CD creation are also quite polished. You now have the option to add menu screens to your VCDs using text and background images of your choice. It also comes with its own video editing subprogram. Photo CDs can be set to give slideshows and even have music running in the background.

CD copying and data handling are good, but there is no provision for creating permanent hard drive images of CDs.

One of the unique features found in Easy CD Creator is DirectCD. This allows you to format a blank CD so that you can copy individual files to it from Windows Explorer. Better yet, if you've got a rewritable CD, you can delete files as well. This makes it a decent replacement for a Zip disk, but other PCs will



probably need a CD-RW drive to read them. APC had problems running CDs formatted by DirectCD created under Windows 98 when we tried to run them on some Windows 2000 machines. However, they worked fine under Windows Me and other Windows 98 machines.

On the whole, Easy CD Creator 5 has good functionality, but it is missing some of the more specific components found in other burning programs. It performs quite well in general data handling, but it really excels in multimedia creation. These are second to none, so if you're keen on creating audio, video and photo discs, you can't go wrong with Easy CD Creator 5.

Stephen Withers and Daniel Gardiner

Toast 5 Titanium

- Pros** Wide hardware compatibility
Wider feature set than OEM version
- Cons** No Mac OS X support

Contact Siltek Asia Pacific

Phone (02) 9870 3600

Online www.roxio.com

Price \$219

Easy CD Creator 5 Platinum

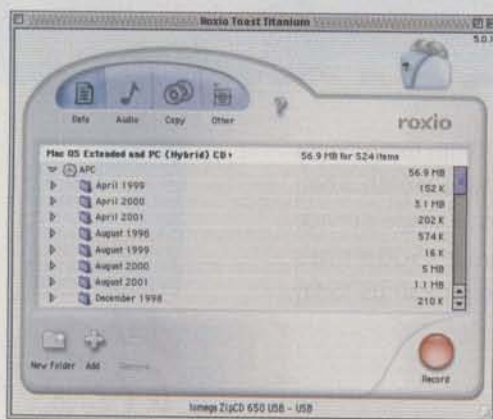
- Pros** Full-featured package
Good general multimedia capabilities
- Cons** More expensive than competitors

Contact Siltek Asia Pacific

Phone (02) 9870 3600

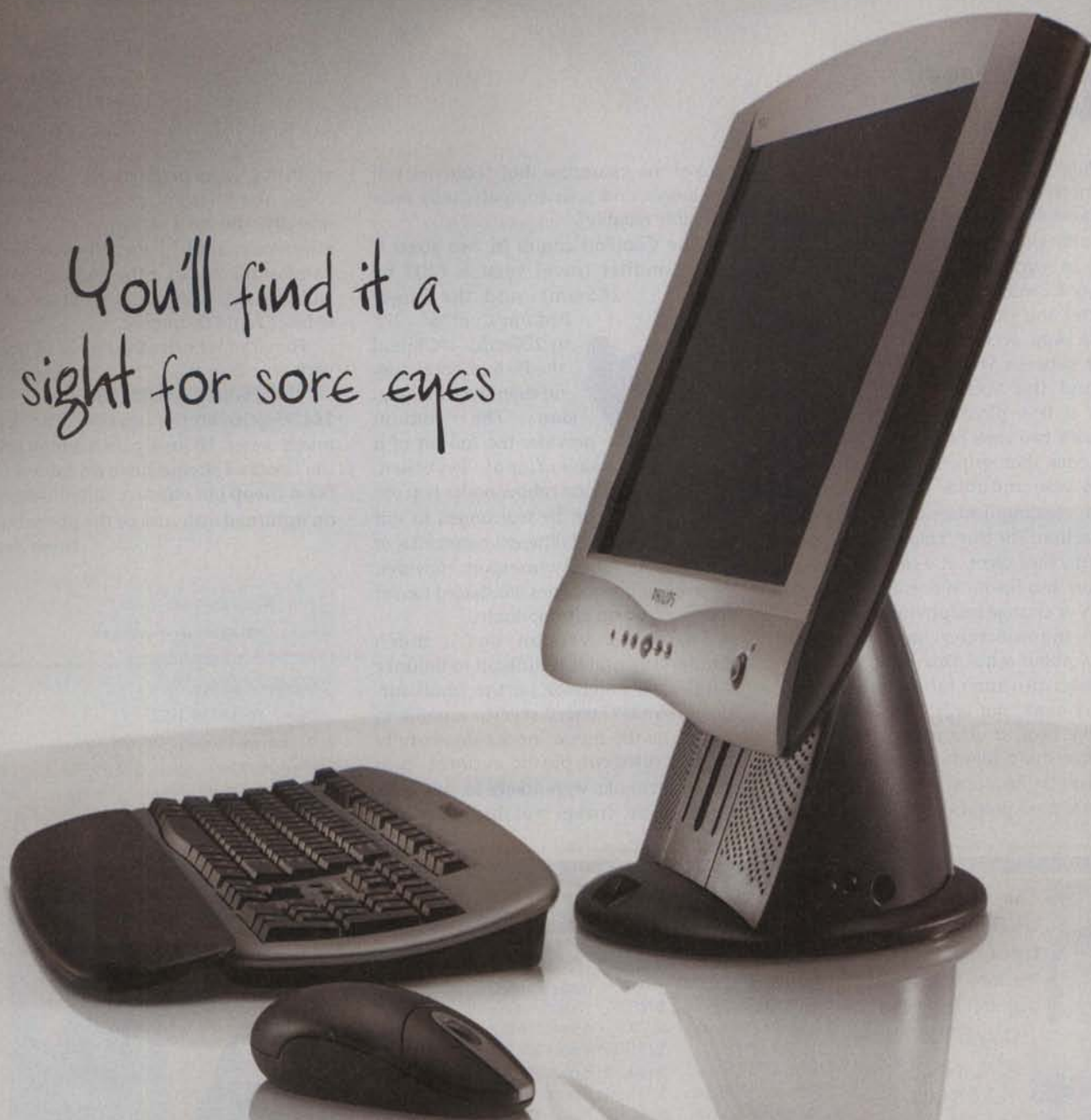
Online www.roxio.com

Price \$139



★ EURO-TESTING PROGRAM CMA 4/01

You'll find it a
sight for sore eyes



Not only is the Philips DesignLine 150X the best looking LCD monitor around, it's easy on the eye in many other ways too. No radiation, flicker or reflection reduces the damaging effects regular monitors have on frequent users. And its wide 160° viewing angle makes it easier to share the view with others. Plus, the 150X has a DVI interface connector for dual DVI and VGA connectivity, ensuring the user has the sharpest image possible.



PHILIPS

Let's make things better.

For more eye-opening reasons to upgrade, or for information about the range of Philips CRT and LCD monitors, fill out the following coupon, call 1800 809 586, or visit www.philips.com.au.

Mr / Mrs / Ms / Other _____ Name _____
First name Last name
Organisation _____
Title _____ Phone () _____
Mail to: Philips PC Peripherals, PO Box 1414, North Sydney NSW 2060.

CoolPad

Are you forever playing hot potato with your notebook? Some 900MHz notebooks and powerbooks can generate alarming amounts of heat. This might be nice and toasty in winter, but it can cause many notebook owners to blow a fuse.

Enter the CoolPad. This simple prop acts as a buffer between your lap and the notebook. It is a plastic tray with two rows of rubber nodes that grip the notebook's base and raise the back by 5.3cm, creating a more comfortable typing position. The tray is made of two pieces of plastic that pivot on a central screw, so you can spin the notebook during presentations or change peripherals easily.

The manufacturers make some big claims about what this basic notebook accessory can accomplish. According to the product blurb, not only can the CoolPad beat the heat, it also reduces the risk of repetitive strain injury and prevents wear and tear on furniture. The CoolPad does live up to these promises, but APC was sceptical of the assurance that "batteries will last longer and your computer may even run more reliably".



tical of the assurance that "batteries will last longer and your computer may even run more reliably".

The CoolPad comes in two sizes: a smaller travel version (207 by 165mm), and the larger Podium CoolPad (275 by 220mm). APC found the Podium more useful than the travel version. The Podium provides the full tilt of a conventional keyboard, and the rubber nodes pop out and can be rearranged to suit the base of different notebooks, or stowed away for easy transport. However, the front and rear nodes are spaced too far apart to hold an ultraportable.

The travel version has a much smaller tray and it is difficult to balance a full-sized notebook on the small surface area. APC tested several notebooks and while the rubber nodes successfully gripped different plastic surfaces, full-sized notebooks were likely to tip backwards. The travel version provides

stability to ultraportables, but only raises the back by about 2cm. Consequently, the heat does not dissipate as effectively, and it doesn't provide the comfortable tilt that the Podium does. It still prevents overheating, but the result is more tepid than cool.

For what is basically a piece of plastic with four doorstops, the \$74.95 price tag on the Podium is outrageous and the \$44.95 price on the travel version is not much better. To justify such a high price, the CoolPad should have an inbuilt fan. For a cheap but effective alternative, use an upturned dish rack or the phonebook.

Fiona Angus

Pros Beats the heat

Cons Outrageously overpriced

Contact Caprina

Phone (02) 8339 1222

Online www.roadtools.com

Price Podium CoolPad, \$74.95;
CoolPad, \$44.95

www.everythinglinux.com.au

The Alternative Operating System Store

Distributions

SuSE 7.1 Pro	\$120.00
SuSE 7.1 Personal	\$ 79.95
Redhat 7.1 Pro	\$255.00
Redhat 7.1 Deluxe	\$160.00
Redhat 7.1 Official	\$ 25.00
Mandrake 8.0 Pro	\$289.00
Mandrake 8.0 PPAck	\$129.00
Mandrake 8.0 Std	\$ 59.00

CD's

Mandrake 8.0 (2CD)	\$ 15.00
RedHat 7.1 (3CD)	\$ 15.00
Debian 2.2r3(3CDR)	\$ 25.00
Caldera eDesk 2.4 GPL	\$ 11.00
Caldera eServ 2.3 GPL	\$ 11.00
Many more... see the website	

Merchandise

Jumbo "VI Mug"	\$ 14.30
"/dev/mug"	\$ 10.45
"tuxman" Mug	\$ 13.20
12cm "Tux" Penguin	\$ 12.00

Plextor CD-ReWriters

16x10x32 (ATAPI)	\$626.20
12x10x32 (ATAPI)	\$455.40
12x10x32 (uSCSI)	\$619.85

Networking (Netgear)

10/100Mb Ethernet NIC	\$ 41.55
4 port 10Mb hub	\$ 81.90
4 port 10/100 hub	\$173.65
8 port 10/100 hub	\$218.05
5 port 10/100 switch	\$209.55
8 port 10/100 switch	\$289.70

Modems (NetComm)

Roadster-II 56k	\$193.25
Smart I-Share56	\$483.25
(Embedded Linux gateway)	

Modems (Dynamlink)

Internal ISA 56k	\$123.20
Internal PCI 56k (Lucent)	\$ 69.65

USB

2 port USB PCI adapter	\$ 45.55
Digital Camera	\$101.85
4 Port Hub	\$ 78.45
Optical Mouse	\$ 92.00
Cables (assorted)	\$call/web
5m Repeater Cable	\$ 69.60

Top Books

Linux Firewalls 1/e	\$ 71.35
RH Certified Eng Study Gd	\$ 92.40
MySQL	\$ 89.00
Running Linux 3/e	\$ 96.60
VI Editor Pkt Ref.	\$ 21.00
Bld. Database Apps u/PHP	\$ 62.75



17" Penguin
Monitor Cover
\$41



Tribes 2
Now Shipping!
Linux Only
\$95

LINUXHELP

Support, Consulting, Development
From Casual Support, right up to Full Contracts
LinuxHelp can service your organisations Linux needs. You don't need to hire expensive staff to maintain your Linux server, save on on-costs, and go with a company with over 8 years of experience. <http://www.linuxhelp.com.au>

Tel: 02 8753 0792 - Fax: 02 9712 3977

Sydney store : 79a Great North Rd, Five Dock, 2046

Phone: 02 9712 1799 Fax: 02 9712 3977

Prices subject to change without notice

Check website for latest prices. All prices include GST.

You DONT need a credit card to order online

I can...



Reduced operating costs.
A Super Economy mode vastly improves operating economy without the definition sacrifices common to so many draft modes. It effectively quadruples output from both the black and colour cartridges.¹

...fit even the tightest budget.

Brilliant plain paper photo quality, automatically.

A selectable function called Photo Optimiser is included in the printer control software. It automatically adjusts for defects in exposure, highlights and shadows, and prints accordingly with standard inks designed to optimise quality on low-cost plain paper.



Before.



After.

High quality blacks at high speed.

The optional high capacity black ink cartridge uses 64 print nozzles for high print speeds. The selectable text smoothing mode goes up to 720 dpi to maximise text quality.



Optional BC-03 black ink cartridge.

BJC™-1000SP

colour Bubble Jet™ printer

Just \$119^{RRP}



Better Internet images.

Image Optimiser, a printer control software feature, automatically "corrects" low-resolution images up to the printer's maximum resolution.



Superior photographic reproduction.

The optional PhotoRealism™ cartridge is ideal for high resolution papers. Low-density inks vary colour saturation per dot to dramatically increase the colour combinations, reduce grain and smooth tones.



PhotoRealism produces colours between colours.

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.



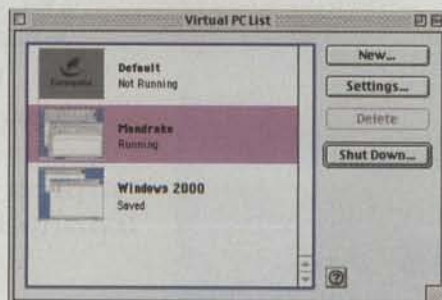
You can...

Canon

Virtual PC 4.0 with Windows 2000 for Macintosh

Virtual PC is the most highly regarded PC emulator for the Macintosh. The big changes from version 3 are improved performance and support for multiple virtual machines, so you can run more than one PC-based operating system (or multiple copies of one OS) at the same time. Only the foreground virtual machine is active; if you start a time-consuming process in one virtual machine and then switch to another, no work will be done in the first until you return. A side effect is that the operating system's software real time clocks stop when they're in the background. You also need plenty of RAM to run multiple virtual machines.

The true measure of an emulator's performance isn't synthetic benchmark results or installation times, but how usable it is when performing everyday tasks. APC tested Virtual PC 4.0.2 on a 400MHz PowerBook G3, running programs such as Access (using modest data files), and found the speed acceptable. The best results are achieved on a G4, where it takes advantage of the velocity engine for maximum performance.



Windows 2000 is preinstalled on a disk image, but you can add Connectix software for better integration with Mac OS. This is well worth the minor effort involved, but it's a wonder these routines aren't preinstalled.

We also installed Mandrake Linux from *The Linux Pocketbook*, 3rd Edition, a painless but fairly slow job. The result was impressive — you could hardly tell that Netscape was running on emulated hardware, but transferring data to and from the Mac is only possible via disk image files. Expect to see a Red Hat Linux edition of Virtual PC 4.0 soon, complete with the cross-platform integration features.

One of Virtual PC 4.0's nice touches is that it grabs memory as required (you can limit the maximum available to individual virtual machines) and expands disk images as necessary to accommodate the files stored on them, as opposed to needing set amounts of memory and storage. Virtual PC politely warns you before the physical disk is completely full, giving you an opportunity to clear some space.

Virtual PC is not compatible with Mac OS X, even in the Classic environment, but Connectix is working on a separate version for Apple's new operating system.

Stephen Withers

Pros	Improved speed
	Good documentation
Cons	No Mac OS X support
<hr/>	
Contact	Firmware Design
Phone	1300 369 951
Online	www.connectix.com
Price	\$779

Connectix Virtual PC . . . for PC?

When APC first heard about Virtual PC for PC, the initial office reaction was a resounding "eh?". Running an emulated Windows PC on a Mac, or a system running Linux, OS/2 or BeOS makes sense. Eating up system resources to do exactly the same thing on a system that's already running Windows seems like just a great excuse for getting 512M more memory. APC took a look at a preview version of Connectix's Virtual PC for PC.

Virtual PC defines all its additional virtual machines in terms of drives, and the first step in setting it up involves defining the parameters of each system: memory, hard drive space and so on. There are preset values for every Microsoft OS from DOS 6 upwards, but these are adjustable. It isn't worth running Virtual PC on a system with less than 128M of RAM; less than that and you'll have almost no free memory left to assign to the application. Having defined drives, you then must install the OS of your choice, either by purchasing OS 'packs' from Connectix (not



available for this preview version) or by installing the system via bootable CD or floppy. Installation on our test machine, a Pentium II 350 with 128M of RAM, was slow. Once the OS is installed, it's practically identical to running that OS normally, only somewhat slower. We accessed the Net, played solitaire, installed Microsoft Word and ran some games.

APC hit a glitch trying to install nVidia display drivers, as it failed to identify the

installed card correctly; whether this was a function of Windows or the emulation was hard to identify. It does affect the running of graphically intensive software (such as our test games).

So, why would you bother running a virtual PC on a PC? Well, it does provide an alternative to a multiboot system, if that's your thing. It's a great test environment for nongraphical applications; you can crash, burn and reboot the system without any downtime. On the minus side, you're working with a system with lower specifications than the host machine, whereas in a real multiboot system they'd be identical. At the preview stage, graphics and network drivers didn't work all the time. Whether these will be fixed for final release or left in their emulated stage isn't clear. Virtual PC has great novelty value — there's nothing like installing Windows 3.1 on a Windows 2000 machine to remind you how far operating systems have come.

Alex Kidman

I can...



Exceptional results, easily.

The inks are optimised for plain paper. Quality can be automatically enhanced with Drop Modulation Technology™ with variable drop sizes. These are placed in any of five combinations to smooth colour gradations and improve tonal quality.

...get exceptional quality, very affordably.



Better internet images, special effects.

Image Optimiser can automatically "correct" low-resolution Internet images up to the printer's maximum resolution. Turn photos into simulated illustrations and create sepia hues, print banners up to 6 A4 pages long, overheads and even T-shirt transfers.



Duplexing, high speed blacks.

The driver allows manual duplex. For B&W only, an optional dedicated black ink cartridge with 128 print nozzles offers print speeds up to 5 pages per minute.¹



Reduced operating costs.

Super Economy mode improves operating economy without the definition sacrifices common to many draft modes. It effectively quadruples output from both the black and colour cartridges.³

5 times the colour.

Optional PhotoRealism™ inks vary the saturation per dot. This produces up to five times as many colour combinations as conventional CMYK inks for better half-tones and less grain.

PhotoRealism produces colours between colours.



Optional scanner cartridge captures colour photos with resolutions up to 360 dpi.



Built-in parallel and USB interfaces for Windows and Mac.²



BJC™-2100SP

colour Bubble Jet™ printer

Just \$159^{RRP}

Canon Customer Care.

The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.



You can...

Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks, and Bubble Jet, BJC, Drop Modulation Technology and PhotoRealism are trademarks of Canon Inc. Microsoft®, Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and other countries. Apple®, Macintosh®, Mac® and Mac OS® are registered trademarks of Apple Computer Inc. in the US and other countries. All other trademarks are the property of their respective owners. 1. Duplex printing for Windows® 95 Windows® 98 only. B&W print speeds require optional black ink cartridge. Print speeds may vary with the content of the document & the processing speed of the host computer. 2. Printer driver support is provided for Windows® 95 Windows® 98 Windows® 2000 Windows NT® 4.0 via the parallel port. USB interface can only be guaranteed with pre-installed Windows® 98, Windows® Me and Windows® 2000 and Mac® OS 8.1+ or 9.X. 3. B&W output for BC-20 ink cartridge at 1500 characters per page and colour output for BC-21c measured at 7.5% coverage. Specifications are subject to change without notice. Canon Australia Pty Ltd ABN 66 005 002 951. CS0445/2

PocketZip PC Card Drive

It's taken a while, but Iomega's 40M Klik disk — recently rebranded as PocketZip — seems to have finally found its *raison d'être*. Klik never achieved the widespread OEM adoption that the company had hoped for.

It fell to Iomega's HipZip digital music player to turn the palm-sized diskette into something more than a novelty. At about \$30 each, the PocketZip platters allow you to save more music per dollar than the solid-state wafers, such as CompactFlash and SmartMedia cards, used by most digital audio devices.

However, the HipZip's other talent is that it doubles as a storage drive. Plug it into the USB port of any Windows or Mac machine and you have a quick, highly portable way to move files — up to 40M — between PCs.

The PocketZip PC Card Drive refines this concept with an eye on the notebook market. APC discovered that it's basically a repackaging of the original Klik PC Card Drive. However, this doesn't detract from the PocketZip's allure.



A PocketZip disk (one is supplied in the package) slides neatly into a PC Card shell, which in turn slips into a notebook's PC

Card slot. Windows Me correctly identified the device and loaded drivers native to the OS and the drive immediately appeared in Windows Explorer.

Installing the included Iomega-Ware software adds a QuickSync backup utility and the typical right-click menu options, as well as an appropriate icon in My Computer. Disappointingly, the drive runs only on Windows. In APC's tests, a 10M file shuttled between disk and desktop in just under three seconds. The drive spins down into sleep mode three seconds after it's last used, so the impact on notebook battery life is minimal.

On its own, the PocketZip PC Card Drive is a nifty solution for sharing files between Windows notebooks. If you own a HipZip player, you get the bonus of being able to

effortlessly load music onto a handful of PocketZip disks, directly from your notebook, without having to fiddle with USB hookups or even having the player at hand.

However, when it comes to convenience, PocketZip isn't the only game in town. APC is still enamoured of USB minidrives such as IBM's Memory Key (see APC April, page 42). It's not as cheap if you want an easily expandable 40M at your fingertips, but it's more than enough for putting essential documents, images and drivers in your pocket.

David Flynn

Pros Fast

Comparatively cheap

Cons No Mac support

Contact Iomega Australia

Phone (02) 9925 7700

Online www.iomega.com/anz

Price \$229

Xircom SpringPort Modem 56

You can take a handheld to places your PC can't go — and now your Internet connection, email and Web sites can also come along. Xircom's SpringPort Modem 56 slides into the Springboard slot on any Handspring Visor.

APC field tested the first of Xircom's SpringPort products. In coming months, the group will grow to include an Ethernet adaptor, as well as wireless modules for 802.11b and Bluetooth.

The three AAA cells that power the Modem 56 make the module much heavier and thicker than the Visor. This, in turn, makes the handheld unwieldy for conventional use, so you'll only want to fit the modem when it's time to go online. At least the modem props the Visor at a 30° angle to your desk, so you can tap your way around the Net without having to hold the device in one hand.

The Visor recognises the Modem 56 module as soon as you slide it into the Springboard slot. After a brief automatic



test of the modem and battery condition, icons for several applets that are preloaded into the module's flash RAM appear on the menu screen.

Just plug a phone line directly into the RJ-11 jack, enter your ISP and mail settings, and hit the Connect button. This elegance evolves the SpringPort modem from plug and play into smile and dial, but the manual could have been clearer about the steps involved.

Supplied software includes AvantGo for online and offline browsing, and MultiMail SE for POP3 and IMAP4-based email.

MultiMail SE allows you to download entire messages or just the headers. Attachments are stripped out and mails appear only in plain text. However, APC's test account contained a backlog of messages that froze MultiMail SE and the Visor in their tracks. Unless you log in often, APC suggests you keep a separate email account to be used only when you're on the road.

The FileMover utility allows you to load additional programs into the module's spare 188K of memory; you can even

replace the included applications with your own suite of software. The Modem 56 also allows connection to a mobile phone using an optional cable, with versions available for the usual suspects — Nokia, Ericsson and Motorola.

APC found the unit to be quite robust, but the battery pack was fiddly. Xircom should also consider having the Modem 56 or the Visor emit a series of beeps or an onscreen alert once you're online, as there's no indication that your connection has been successful beyond the flashing green LEDs near the phone jack.

David Flynn

Pros Easy to connect

Cons Fiddly battery pack

Manual falls short of the mark

Contact Xircom

Phone (02) 8923 7000

Online www.xircom.com

Price \$329

I can...



Very smart monitoring of absolutely brilliant colours. All inks have a higher optical density to produce more vivid, natural looking colours. They are contained in separately replaceable transparent ink tanks, and each is separate from the print head. The printer driver alerts you when they are low. You replace only one colour at a time, and because the standard inks are optimised for low cost plain paper, you can keep operating costs down.



Light



Light

Smart monitoring system.

...do anything you want, brilliantly.

1440 dpi, variable ink drop sizes.

Quality is exceptional, even on low cost plain paper with resolution up to 1440 x 720 dpi, plus Drop Modulation Technology™ with variable ink drop sizes. B&W is enhanced using high optical density black pigment inks.



Optional PhotoRealism™

Special inks vary the saturation level per dot (e.g. 33%, 67%) for up to 5 times as many colour combinations as conventional



CMYK inks. The result is smoother tones with vastly reduced grain.

PhotoRealism produces colours between colours.

Brilliant Colour Inks



ppm colour



ppm mono

Better print quality, automatically.

Photo Optimiser adjusts for defects in exposure, highlights and shadows while Automatic Tone Control reduces the 'colour noise' from compact digital camera images.

Image Optimiser prints low-resolution Internet images up to the maximum resolution supported by the printer.



High speed printing.

Large print heads and bi-directional printing produce up to 4 colour pages per minute. An optional, dedicated black ink cartridge is capable of B&W speeds up to 9 pages per minute.²

Parallel and USB interface.

Both ports are built-in for Windows and Macintosh.¹



Turn your printer into a 720 dpi colour scanner with the optional scanner cartridge, pictured left.

\$400

colour Bubble Jet™ printer

Just \$249¹⁰⁰¹

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.



You can...

Canon

Price shown is recommended retail price including GST. Canon® is a registered trademark and Bubble Jet, Drop Modulation Technology and PhotoRealism are trademarks of Canon Inc. Microsoft®, Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and other countries. Apple®, Macintosh®, Mac® and Mac® OS are registered trademarks of Apple Computer Inc in the US and other countries. All other trademarks are the property of their respective owners. 1. Printer driver support is provided for Windows® 95, Windows® 98, Windows® 2000, Windows® Me, Windows NT® 4.0 for the parallel port and pre-installed Windows® 98, Windows® 2000, Windows® Me and Mac® OS 8.1+ or 9.X using the USB port. 2. Print speeds may vary with the content of the document and the processing speed of the host computer. B&W print speeds require the optional BC-30e black cartridge. Specifications are subject to change without notice. Canon Australia Pty Ltd ABN 66 005 002 951. CS0445/3

Learning by edegrees

Who are you calling a misfit?

I read your article, 'Degree Download' (APC May, page 72) with interest. I sit in front of a computer screen for 40 hours per week at work and another 20 hours per week completing a distance education IT degree. My computer has everything I need at the touch of a button: enrolment details, course results, lecture notes, bulletin boards, chatrooms, previous exams and assignments that I can lodge electronically. In some instances, these are returned and graded without the need for me to have any contact with a lecturer.

And where does this leave me? In the same position as any other student, minus the pub crawls, protests and possibly a little bit of sunlight. When I emerge from my bunker in four more years with a piece of paper in my hand, RSI in my wrists, Coke-bottle glasses and a crooked back, I'll let you know whether or not I'm a social misfit only capable of speaking to people in ones and zeroes, or a man who slots right back into society — drunken binges, banner waving, sunlight and all.

Stephen Gullick
Vermont, VIC



Better homes and PCs

As a novice in the world of computers, I was baffled by a worm virus that attached itself to my emails. I wanted it gone. I called the shop I purchased the outfit from and asked them what the best antivirus program is to buy. As most businesses are preoccupied with sales and more sales, I was dumbfounded when he advised me to purchase the May issue of APC magazine, which was previously unknown to me. He said I could find enough protection on the free CD to rid me of the virus. Well done, Neil from Wonthaggi Computers, Victoria; your genuine brand of service is rare and refreshing and your honest (and free) advice was absolutely right. I loved the article on viruses (APC May, page 100); I feel better informed and more alert. Out goes *Better Homes & Gardens* and in comes APC each month.

Lisa Sorrell
Korumburra South, Vic

Shelf space for ebooks

Finally, an ebook on the CD. More, please! The sound and video clips are good for using space, if you like that sort of thing, but even with all the different reader formats, an ebook takes up less disk space than one MP3 file. This is definitely an improvement in APC CD content and I hope you'll be including more brain food soon.

Elizabeth Jones
Internet

Young, not stupid

In reply to Samuel Koh (letters 'Mobile Costs' APC April), I honestly can't believe these young people cannot understand the ramifications of signing a mobile phone contract. I have been a telecommunications consultant for a number of years, and have encountered comments like Samuel's over and over again. With any contract you must always make sure you FULLY understand what it is you are signing up for, because once you sign that contract, you are effectively saying 'I understand what it is that I am signing here and I agree to it all.' A contract is simply an agreement

We welcome comments and suggestions. Send correspondence to APC Readers' Say, PO Box 4088, Sydney NSW 1028, or email apc@acptech.net. Letters can also be submitted online at apcmag.com. All correspondence becomes the property of APC and is subject to editing.

with a mobile provider to deliver a mobile phone and mobile telecommunications on mutually agreed terms. These terms are ALWAYS clearly stated on the contract paperwork, usually in the small print at the bottom and very near to where you have to sign. Samuel mentions that these companies should provide information in the contracts about the total costs of the deal and other issues. This sounds like the complaint of somebody who has not read all of the small print. At a guess, if he was anything like a majority of my clients, he would have thought that there was way too much fine print to read and therefore couldn't be bothered, but the deal sounded good, so he signed anyway. Was it possibly one of these contracts with a cheap phone on a cheap monthly plan but with hugely expensive calls all the time? This particular style of contract is the one young people seem to get caught out on.

If you don't want to sign a contract, you can always buy your mobile outright or pick up one secondhand, then connect to any service provider on a monthly billed plan or by using a prepaid service. Remember, a 'free' phone is never free. There is always a catch and once signed, these contracts are legally binding and very, VERY hard to break.

Peter James
Internet

Letter of the month



The most interesting letter sent in during the month of July will win its writer a free copy of Microsoft Office XP Professional,

with the new 2002 versions of Word, Excel, Outlook, Powerpoint and Access. Worth \$699, this pack could be yours for free. The winner of this fantastic prize will be published in APC August. This month's winner is Stephen Gullick.

Winning subscriber

By subscribing to APC in our May issue, Ms V Sprowles of Castle Hill, NSW, has won a Beyond SuperO M-Class System valued at \$3,990.

Conditions of entry

These conditions apply to all competitions in APC July, unless specific conditions are provided with the competition. Instructions on 'How to Enter' form part of the Conditions of Entry of all competitions in APC July. Entry is free and open to all residents of Australia other than employees of ACP Publishing Pty Ltd (ACN 053 273 546), suppliers of competition prizes, their families and associated agencies. The contests close last mail July 17. Enter according to the instructions supplied with the individual competitions. The judges' decision is final and no correspondence will be entered into. No responsibility is accepted for late, lost or misdirected entries. All entries become the property of ACP Publishing Pty Limited, the promoter, 54 Park Street, Sydney NSW 1028. The prizes are not transferable or redeemable for cash. Any change in the value of the prizes occurring between the publishing date and the date the prizes are claimed is not the responsibility of the promoter. Winners will be notified and their names will be published on apcmag.com.

I can...



A smart ink monitoring system alerts users when a colour is running low. There are individual transparent ink tanks for all colours separate from the print heads, significantly reducing operating costs and allowing you to replace only the empty tank.

...print at high speed, up to 1440 dpi.

Advanced print head system.

The dual print head system meets the needs of even the most demanding user. Speed, plain paper quality, individually replaceable transparent ink tanks plus optional 6 colour PhotoRealism and high definition colour scanning. The BJC-6200 offers it all.

1440

dpi plus Drop Modulation Technology

Superior plain paper print quality.

Standard inks are optimised for plain paper. Resolutions go up to 1440 x 720 dpi. Drop Modulation Technology™ automatically adds variable ink drop sizes and the printer control software defines colour more in line with perceptions of the human eye.



Separate ink tanks.

PhotoRealism™ with 6 ink colours.

Optional low density PhotoRealism inks may be used simultaneously with standard density colour inks. The 6-colour system delivers life-like reproduction, with smooth tonal graduations, especially on higher paper grades.



Higher speed, blacker black.

A high performance engine with bi-directional printing results in monochrome text speeds up to 10 pages per minute and colour printing up to 7 pages per minute, making the BJC-6200 the fastest printer in its class.¹ The black cartridge employs pigment inks for a richer print density with greater water resistance.



Built-in parallel and USB interfaces for Windows and Mac.²



BJC™-6200

colour Bubble Jet™ printer

Just \$299^{RRP}



An optional scanner cartridge delivers resolutions up to 720 dpi.

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.



You can...

Canon

Price shown is recommended retail price including GST. Canon® is a registered trademark and Drop Modulation Technology, BJC, Bubble Jet and PhotoRealism are trademarks of Canon Inc. Microsoft®, Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and other countries. Apple®, Macintosh®, Mac® and Mac OS are registered trademarks of Apple Computer Inc. in the US and other countries. All other product, brand and company names are trademarks of their respective owners. 1. Print speed may vary with the content of the document and the processing speed of the host computer. 2. USB interface can only be guaranteed with pre-installed Windows® 98, Windows® 2000, Windows® Me and Mac® OS 8.1+ or 9.X. Specifications are subject to change without notice. Canon Australia Pty Ltd ABN 66 005 002 951. CS0445/4

Less than comprehensive

The front cover of your May edition says in a big white font "Pentium III notebooks take flight". The first line of the article leads us in with, "It's been nine months since APC's last comprehensive notebooks roundup . . ." By now the reader has settled into their favourite chair with their liquid refreshment of choice and is preparing to read a comprehensive, definitive, test to end all tests review of notebooks. And what awaits them? A four-page article covering eight notebooks. Yes, eight notebooks. I have taken the trouble of looking up the word comprehensive and explanations such as "so large in scope" and "entire field of major study" crop up. I'm sorry to say APC that no matter how hard I try a four-page review of eight notebooks cannot be considered comprehensive.

Mark Bassett,
Sydney, NSW

Like the new outfit?

I like the new CD covers that have come with the June issue of the magazine. The other covers tended to crack when they were delivered through the mail. So thanks, we appreciate the little things that get done.

Matt Collins
Internet

As a long-time subscriber to APC, I am disappointed when my CDs arrive in damaged cases each month. But at least the old cases fit into my CD rack. This month, my CDs again came in a broken case, but it won't fit a standard CD rack. Please return to standard cases and go back to listing the software on the CD cover.

James Simons
Internet

Scusi me, but why no SCSI articles?

As an avid reader of APC, I have recently been shocked by my introduction to the world of SCSI. I am writing to express my disappointment that your magazine focuses so little attention on important systems like SCSI and RAID arrays. In the bad old days, computer magazines used to always talk about power users and their systems. This has been replaced by an endless stream of review of computers suitable for the *Brady Bunch*. The reviews devolve into a small number of themes, usually harping on about the processor and RAM, until one is almost sick of hearing about them. I think we all know that Intel is going to bring out faster processors, and while they are impor-

tant, computer users are keen to find out about the rest of the computer. In the real world of computing, there are systems which are fragmented and there is plenty of clunky software and bad code. This makes for frequent big hard disk reads, often from different parts of the disk. I doubt that your testing procedures can match this situation. Mostly testing seems to involve a brand new system, freshly loaded with software. A better CPU will make a small difference to my real world situation, but a SCSI hard disk seems to have a big improvement. I, for one, would like to see more focus on hard drive technology.

Ben Balzer
Internet

Domain Games

"Name your domain" (APC June, page 60), states that US domain sellers often charge much less to register .com names. The article quotes \$US20 for a 12-month registration. However, www.ozbcoz.com offers .com domain names at \$25 (about \$US13) and other people do the same — www.aus-names.com offers \$22, www.clickngo.com \$30 (plus GST). Now I am biased, ozbcoz.com is mine, but [clickngo](http://clickngo.com) is a competitor. There are many other Australian companies out there offering good deals to Australian customers. The problem is that some of us do not have the major advertising budgets (and hence high costs) that the vendors that you have sampled can afford. But they do offer the same domain registrations and, in a lot of cases, valuable value adds.

Jim Carey
Internet

XPensive

Hands up if you're sick and tired of Microsoft and their software Gestapo torturing our wallets and minds with yet another version of Office and Windows. In the past five years I have purchased Windows 95, Windows 98, Windows ME and Office 97. I would have upgraded to Office 2000, but a second mortgage on the family home was just too ridiculous. I am a big fan of Microsoft products, it's just that I can't afford to keep up. I don't know what XP stands for, perhaps its XPensive?

Peter & Melinda Arrighi
Internet

Microsoft is watching

Big Brother continues to gain momentum with the introduction of Windows XP and its Product Activation requirements. Microsoft will no doubt assure us that everything is

safe, as they access our entire system. With millions of Windows users worldwide allowing Microsoft legitimate access to their systems and thus their hard drives, Microsoft could scan for any legal or illegal programs residing on that system and use this information to their advantage. If Microsoft wishes to stop piracy, they only have to make their software more affordable and provide better service. I have had every version of Windows and find myself on the verge of updating yet again. However, if Microsoft continue with Product Activation, I can only say Linux is now looking better.

Peter Crake
Internet

A little help?

I recently upgraded to Microsoft Office XP and was delighted to read the coverage of the product in the June issue of APC. Unfortunately, you failed to address the most important issue: what file format changes have been made in each application, and how easy it is to exchange files with colleagues using earlier versions of Microsoft products. Of course, I would have liked to find this information in the Microsoft Help Files, but these maintain the standard of utter uselessness and banality set in earlier Microsoft products.

Leigh Bettenay
Subiaco, WA

The Penguin speaks

In the ongoing conflict between Mac and PC users, I find myself always having to remind people that just because I'm a PC user, it doesn't mean I'm a Windows user. In fact, I have a dual boot machine and use both Windows and Linux. There are many PC magazines out there, but I buy APC every month because it has a good Linux coverage. I consider myself neither 'guru' nor 'elite' for being a Linux user, but rather someone who likes to work their way through the monthly Linux Workshop and slowly build up their knowledge. Please, don't cut back on Linux content. The penguin won't like it.

Campbell Fairweather
Internet

Keep talking

Thank you for Red Hat 7.1 on your June CD. It's wonderful to have such good Linux support in Australia, and all for the cost of an inexpensive magazine. Thanks to APC and Linux, I can afford to compute on my old 486. Keep up your great Linux support.

Tom Russell
Internet

I can...



Super fast, fast mode.

A special fast mode combines an extra large print head capable of up to 12 million ink ejections per second with four drive motors. The paper feed is up to 70% faster, and is enhanced by a 20% greater data compression ratio. This allows fast mode to print up to 15 monochrome pages (text), and up to 10 colour pages per minute.¹



...print up to 15 B&W pages per minute.

5 pico-litre drops for 2400 dpi.

The S600 uses MicroFine Droplet Technology to precision-place extraordinarily small ink drops at resolutions up to 2400 x 1200 dpi.



Better colours that last longer.

The S600 inks produce more vivid colours for improved reproduction on plain paper, and deliver sharper, blacker rendering of monochrome text. The ink range also offers vastly improved light fastness. In a simulated fading test, they have been shown to last up to 25 years using ISO standards for levels of acceptable fading when printed on Canon Photo Paper Pro.²



Resolves speed vs. quality issues.

The S600 also features a special draft mode. Slightly slower than fast mode, it combines high speed, with ink conservation, while resolving the quality issue common to conventional draft modes. New head design and Precision Colour Distribution Technology improve colour consistency while producing high-density, high contrast prints and still achieving B&W speeds up to 12ppm.¹

Smart ink monitoring.

Inks are contained in separately replaceable transparent ink tanks, and each is separate from the print head. The monitoring system alerts you when they are low, so you replace only one colour at a time.



S600

colour Bubble Jet™ printer

Just \$599^{RRP}



Parallel and USB interfaces are built-in for Windows and Macintosh.³

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.



You can...

Canon

Price shown is recommended retail price including GST. Canon® is a registered trademark and Bubble Jet and MicroFine Droplet Technology are trademarks of Canon Inc. Microsoft® Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and other countries. Mac® and Mac OS are registered trademarks of Apple Computer Inc in the US and other countries. All other trademarks are the property of their respective owners. 1. Print speeds may vary with the content of the document and the processing speed of the host computer. 2. Based on in-house tests using ISO criteria. 3. Printer driver support is provided for Windows® 95, Windows® 98, Windows® 2000, Windows® Me, Windows NT® 4.0 for the parallel port and pre-installed Windows® 98, Windows® 2000, Windows® Me and Mac OS 8.1+ or 9.X using the USB port. Specifications are subject to change without notice. Canon Australia Pty Ltd ABN 66 005 002 951. CS0445/5

"Whole new directions" in computing led
us all down the garden path.

Laphelds and luggables

PC makers have long been obsessed with two goals — making PCs portable and packing as many peripherals as possible into a single box. No wonder APC was convinced the PC had "come of age" when portable all-in-one computers hit the market.

In the mid-1980s, the computing industry thought desktop PCs weren't going anywhere. The consensus was that the PC needed something more than extra speed and disk capacity to make people want one.

Telecom thought it had the answer. Most people had a phone, so why not make a PC with a built-in phone? In January 1985, Telecom released the ComputerPhone, or the 'One Per Desk'. To cope with the extra telecommunications hardware, the ComputerPhone ran the QDOS operating system and had a colour-coded keyboard with extra commands such as SPKR and REDIAL, and a key that timed all your calls. APC thought the ComputerPhone was such a nifty idea that we predicted it was only a matter of time before other PC makers copied the innovation. Needless to say, the ComputerPhone was destined not to last. Buried in the fine print, Telecom warned there was a good chance the ComputerPhone would burn out after five years because it had to remain permanently switched on to receive phone calls. It had a volatile power source.

Not to be outdone, in September 1985 Sharp released a PC with a built-in cassette player. Sharp was convinced cassette technology was a sure thing for computers because, at the time, a floppy drive cost twice as much as an entire computer. Unhappily for Sharp, it turned out people were willing to pay extra for a floppy drive, because cassette players were

excruciatingly slow and unreliable.

Two months later, Sony released a PC with a built-in printer and monitor. By this time, extras weren't enough, so Sony made this 'portable'. However, the so-called monitor of this 'lapheld' could only accommodate about 10 lines of text. The machine did not fit in with APC's April 1985 predictions of where the portable PC was heading, but we thought it *must* be a portable — it had a handle. The forecasts turned out to be spot on, but PC makers obviously weren't paying attention, because they forged ahead with the 'luggable' — a desktop PC that you could supposedly carry around.

In February 1987, Apple plunged into luggables in a big way with the Dynamac, its first so-called portable. Despite the hype surrounding what was the first consumer version of the legendary Dynabook (the name given to the design concept of the first notebook PC), this machine went nowhere fast.

APC questioned the 'portability' of the Dynamac. Not only was it far too big for anyone's lap, it weighed almost 10kg and was so power hungry it had to remain plugged in all the time. It didn't even come with a long extension cord. Moreover, the electroluminescent display flickered unbearably under fluorescent light. Mystified as to who would be willing to pay \$10,500 for such a machine, APC staked out Apple's stall at a PC show. According to the APC spy, the only serious enquiries about the Dynamac were from the head of a Swiss bank and "a very wealthy Arab". APC went on to describe the Dynamac as the "Porsche of computers" and a magnet for people who want to impress others with the Dynamac's massive 1M of RAM and the one true marker of '80s PC portability — a handle.



▲ It's not luggage, it's not a portable — it's a luggable.



▲ It's not a handheld, it's not a laptop — it's a lapheld.

Sharp understood the importance of luggability — sorry, portability. It may not have been able to compete with other PC manufacturers when it came to the Porsche factor, but it was a clear winner in the "quirky" and "ungainly" stakes.

By January 1986, all the peripherals that could be built in to a PC had been. Undaunted, Sharp took as many peripherals as it could and assembled them into a giant PC jigsaw puzzle shaped like a suitcase. The PC-7000 had a printer, a keyboard, two floppy drives and a monitor with a backlit LCD screen that, incidentally, fizzled out after 1,000 hours. This contraption would probably have failed to qualify as cabin luggage on TAA, but if Sharp had added a cassette player and phone, perhaps someone would have bought it.

Fiona Angus



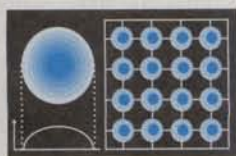
▲ Telecom's amazing ComputerPhone

I can...

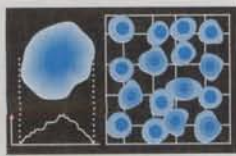


...print photos with **zero** discernable grain.

High precision dot control.



S800.



Lower-level technologies.

Smaller, better ink droplets.

A unique Canon process called MicroFine Droplet Technology™ uses 4 pico-litre ink drops. A special star shaped nozzle creates



near perfectly round, centre weighted droplets for more accurate placement.

Star shaped nozzle.



2400 dpi, super low density ink.

The S800 uses a 1200 dpi nozzle with interleaved printing to achieve 2400 x 1200 dpi. Special low-density inks are approximately 1/6 the density of normal inks. These have an apparent dot size equal to 0.67pl of regular ink.

2400

dpi plus Microfine Droplet Technology

SuperPhoto mode, 49 tonal levels.

In SuperPhoto mode the S800 can print up to 42 ink droplets per pixel. This allows the printer to achieve 49 tonal levels with zero graininess, even in highlights or gradations where dots are normally distinguishable.

Extra large print heads with 6 separate ink tanks.

There are 256 print nozzles per colour on the print head. Separately replaceable, transparent ink tanks and a smart monitoring system help maximise operating economy.



Separate ink tanks.



Parallel and USB interface for Windows and Mac.

Canon Customer Care.

The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.



S800

colour Bubble Jet™ printer

Just \$649^{RRP}

You can...

Canon

Price shown is recommended retail price including GST. Canon® is a registered trademark and Bubble Jet, MicroFine Droplet Technology and the MicroFine Droplet Technology mark are trademarks of Canon Inc. Microsoft®, Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and other countries. Apple®, Macintosh®, Mac® and Mac OS are registered trademarks of Apple Computer Inc in the US and other countries. 1. Printer driver support is provided for Windows® 95, Windows® 98, Windows® 2000, Windows® Me, Windows NT® 4.0 for the parallel port and pre-installed Windows® 98, Windows® 2000, Windows® Me and Mac® OS 8.1+ or 9.X using the USB port. Specifications are subject to change without notice. Canon Australia Pty Ltd ABN 66 005 002 951. CS0445/6



Jeremy Horey

Jeremy Horey is a solution architect at Dimension Data iCommerce.

He can be contacted at

jhorey@ozemail.com.au.

The views expressed in this column are not necessarily those of his employer.

Many services and systems are failing due to a lack of user-centred design.

Focus on the user

Did you hear about Netaalert? This service was set up by the Federal Government to advise people about protecting children from unsuitable content on the Internet. It cost about \$2 million.

In its first six months of operation, despite spending more than \$200,000 on promotion, the service received just 146 phone enquiries. However, it did receive 272 wrong number calls. In six months, it averaged less than two email enquiries per month. I think it's reasonable to say that the service was a failure. The government spent a lot of money setting up a service that people simply did not want.

This is a good example of something that happens a lot: the failure to consider what people really want. It is the same whether you are designing an information service, a computer system or a shop. You, as the designer or owner of the new service/shop/system, have a set of goals. These may be to provide information, sell goods at a profit, or get people to enter or extract data. However, to get people to use your service/shop/system, you must consider what people want. If you don't, you risk wasting a lot of money.

Forty years ago, when I started building IT systems, people could be forced to use them because it was part of their job. If they were badly designed, cumbersome systems, people had no choice but to use them, because there was nothing else.

Today, things are very different. People have a lot more choice, and they just won't use difficult, cumbersome systems. You can't force someone to use a system any more, even inside an organisation. Today's business environment requires committed workers who will do their best for the organisation. I certainly don't want to waste their time by giving them a system

that will frustrate them or slow them down.

The skill in designing a system is to balance your goals with those of the users. You should constantly be asking yourself how you can encourage people to do what I want them to.

If I'm putting in a document management system, how can I encourage people to enter the right metadata about documents when they place them in the system? If I'm putting in an ecommerce solution, how will I make it easy for people to buy using this system? How can I improve the experience or give them extra value?

This is user-centred design. The design process starts when the user interacts with the system. The designer works towards achieving the goals set by the organisation, but does so by working with the users, rather than ignoring them.

This approach is fundamental to developing successful IT systems. It is also fundamental to success in many other fields. If you want your shop to make a

profit, or if you want people to use your information service, you need to start by paying attention to the people who will visit the shop or contact the service.

Described in this way, it just seems like commonsense. However, in my work, over and over again, I come across people who 'know' what users want. 'We don't need to talk to the users, we've already done that,' they say. Yet when the system goes live, they find out that it is only half as effective as it could be, because the people it's designed for find it difficult to use.

Perhaps if the government had spent some of the \$370,000 it gave to consultants for Netaalert on finding out what people really wanted to know, it might have been more of a success. ■

The skill in designing a system is to balance your goals with those of the users.

I can...



BJC™-55
colour Bubble Jet™ printer
Just \$649^{RRP}

...fit in a briefcase.

PORTABLE PRINTER CHECK LIST

High speed black.



Four-colour print head.



USB interface included
with both models.²



IrDA for totally
cordless operation.



Optional colour scanner
cartridge for images, fax
and OCR.¹



Both fit into a briefcase.



Drop Modulation Technology.



Canon Customer Care. The one-year
warranty is upgradeable to three years for a
minimal charge, and is backed by Customer Care hot-line
support. For more information call 1800 021 167.

BJC™-85
colour Bubble Jet™ printer
Just \$399^{RRP}

BJC-85.
Super powerful portable
printer, international
adaptor standard.

It fits easily into a briefcase, but
offers desktop quality and flexibility.
An international power adaptor is
standard and a sheet feeder is built-in.

IrDA 1.1 plus parallel and USB interfaces are standard.²
A long-life NiMH battery kit is available as an option.³

Exceptional colour, optional PhotoRealism.

Using standard inks optimised for plain paper, both
printers automatically print high quality images using
Drop Modulation Technology™ with variable
ink drop sizes. The optional PhotoRealism
inks offer exceptional photographic printing.

High speed black and white.

A four colour print head with resolution up to
720 x 360 dpi comes as standard. Both printers
accept an optional dedicated black ink cartridge with
128 print nozzles for print speeds up to 5 ppm.⁴

You can...

Canon

Price shown is recommended retail price including GST. Canon® is a registered trademark and Bubble Jet, BJC, PhotoRealism and Drop Modulation Technology, are trademarks of Canon Inc. Microsoft®, Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and other countries. Apple®, Macintosh®, Mac® and Mac® OS are registered trademarks of Apple Computer Inc. in the US and other countries. All other trademarks are the property of their respective owners. 1. Fax and OCR require user-supplied software. 2. USB interface can only be guaranteed with pre-installed Windows® 98, Windows® 2000, Windows® Me and Mac® OS 8.1+ or 9.X. BJC-55 does not include parallel port. 3. Battery optional for BJC-85. 4. Print speed may vary by content of the document and processing speed of the host computer. Specifications are subject to change without notice. Canon Australia Pty Ltd ABN 66 005 002 951.

CS0445/7



Helen Dancer

Helen Dancer is a writer and commentator on the IT industry. She can be contacted at hdancer@acptech.net.

The old adage about teaching a man to fish probably no longer holds true as we move into a world of increasingly outsourced computing.

Power from the source

Give a man a fish and he will eat for a day; teach him to fish and he will eat for a lifetime. The idea that teaching people to be self-reliant is the best thing you can do for them is taking a beating these days with the rise of outsourcing and the increasing popularity of Application Service Providers (ASPs).

Outsourcing is based on the idea that there are people outside your organisation who are far better equipped to take care of your IT&T infrastructure than those inside it. ASPs take the concept even further, claiming that it's better to farm out the serving of applications and storage of data as well.

A study prepared by Deloitte Touche Tohmatsu and the University of Melbourne says that outsourcing has moved through the initial five-year 'fad' period and is now considered standard management practice. It claims 97% of organisations outsource some or all of their IT&T services.

The unbounded spending, project overruns and failures to deliver on productivity expectations of the last decade have meant that companies are now keen to define, manage and unload the risks associated with new IT projects. The corollary is that, as well as being IT experts, smart outsourcers must become risk assessors and risk management experts, able to determine the degree of risk they expose themselves to when they sign the contract and set the fee. At best, according to Ron Bates from Hewlett-Packard's outsourcing division, it's a partnership; an ability of both parties to leverage the skills of each to best effect.

The past 12 months have seen a few landmark outsourcing deals signed. Banks have adopted various outsourcers on previously unheard of 10-year contracts—a veritable lifetime in IT. However, behind the bravado, most 10-year contracts are in reality three by three instalments, giving both parties breathing space. Bates said that 80% of customers typically include an option to reconsider at the end of 12

months. Changes at that point are an acknowledgment on the part of the customer that it initially failed to articulate its requirements clearly enough. An outsourcing contract should be an evolving entity, a statement of intent; if you have the right contractual framework, there should be plenty of room for change.

One of the contributing factors to the rise of outsourcing is a shortage of skilled workers. External factors, such as the Y2K phenomenon and the implementation of GST-related systems, combined with the imperative to join the ecommerce revolution, have meant that IT departments have been increasingly hamstrung when dealing with day-to-day maintenance on one hand

Outsourcing has moved through the initial five-year 'fad' period.

and strategic implementation on the other. Outsourcing compensates for either the resource shortfall or the increased exposure, relieving the IT&T department of daily problems, or supplementing skills for strategic implementations such as Web commerce or CRM systems.

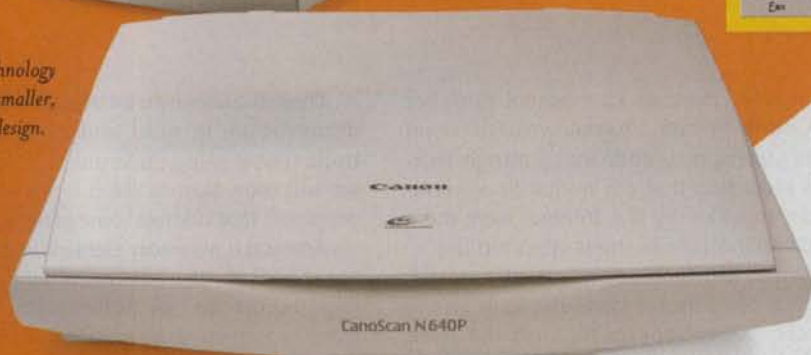
Despite the white noise surrounding IT&T as a growth industry, there is a shortage of skilled workers, and this does not look like changing in the foreseeable future. Silicon Valley remains the first stop on the postgraduate express for Australians, while the declining Australian dollar makes us a regrettably less attractive destination for IT graduates from Asia. Australian companies are struggling to find and retain properly skilled staff. The chair of the Australian Vice-Chancellor Committee, Lauchlan Chipman, warned in April that universities would be unable to attract enough students to meet the demands placed by the information economy, and suggested that the shortfall would approach 10,000 in five years' time.

Multimedia Victoria's latest report into the attitudes of young people to technology skills and the resultant skills crisis is called Reality Bytes. Regrettably, it doesn't seem to be biting hard enough to leave a mark. ■

I can...



LIDE technology allows a smaller, sleeker design.



Easy to use.
The ScanGear Toolbox lets you select functions and the final destination of your scan such as printer (copy), e-mail program, fax, or others, and automatically makes settings for you.



Getting started is easy.

Your scanner plugs directly into the parallel port, or hooks up as the middle link between a printer and your PC. CanoScan™ Setup installs the included software, and you're ready to make your first scan with Windows 95/98/Me/2000/NT 4.0.

Introducing LIDE.™

LIDE (LED Indirect Exposure) changes the way scanners work and their price/performance ratio by eliminating the need for costly, complex mirrors. Yet it maintains image quality and colour clarity in two super slim, sleek scanners.

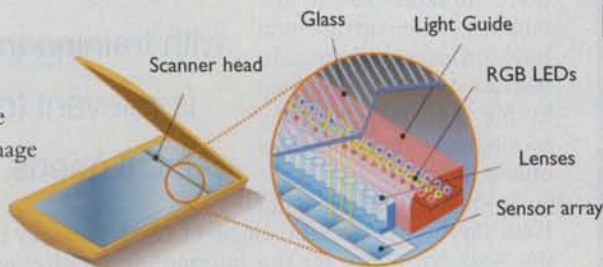
The CanoScan N340P (300 x 600 optical dpi) and CanoScan N640P (600 x 1200 optical dpi).



...get a colour scanner for as low as \$119.

Full software suite, 42-bit colour input.

The CanoCraft CS-P software works for both stand-alone image acquisition, and as a TWAIN driver for other applications. Advanced controls allow various pre-scan settings such as selecting the scan area and selecting up to 42-bit colour input. The software package also includes ArcSoft PhotoStudio 2000 for photo-editing and Caere OmniPage Pro for converting scanned documents into editable text data, plus a CD ROM with user's manuals.



CanoCraft makes high quality colour easy.

42
bit input

CanoScan™
N 640P
600 x 1200 dpi

Just \$149^{RRP}

CanoScan™
N 340P
300 x 600 dpi

Just \$119^{RRP}



Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

You can...

Canon

There needs to be a focus on the use of the Internet for social services, not just commerce.



Jack Heath

Jack Heath is Executive Director of the Inspire Foundation (www.inspire.org.au).

He can be contacted at jack@inspire.org.au.

Building digital bridges

In 1998, Harvard Law School professor Charles Nesson, often known as the Dean of Cyberspace, made the seemingly reckless prediction that the nonprofit opportunities provided by the Internet were more exciting than the business opportunities.

After the tech shakeout, it's now a slightly less fanciful idea, although on the whole, policy makers in Australia have failed to grasp the enormous potential offered by the Internet to social services and their delivery. However, with an election in the offing, we'll no doubt be hearing more about what is being done to address the digital divide, as well as new policy proposals for online social infrastructure.

If this is to translate into anything substantial, there needs to be a quantum leap in the creative thinking of policy makers. So far, the bulk of government attention has been focused on the commercial advantages offered by the technology, and the social disadvantages, such as online gambling.

Speaking at the National Press Club earlier this year, the new CEO of the National Office for the Information Economy, John Rimmer, said that tackling the digital divide was a key priority for the government in 2001. However, he gave little detail. Rimmer went on to cite programs such as Networking the Nation, which addresses questions of access to connections and equipment.

One of the severe limitations of Networking the Nation is that it has been confined to rural and regional areas, when the greatest number of young, disadvantaged people are located in the capital cities, for which there are no national programs.

Designed as a regional telecommunications infrastructure fund, Networking the Nation has, from the beginning, focused disproportionately on access and equipment issues, with insufficient attention paid to training and building online communities through local content development.

There is currently a lot of high-quality IT infrastructure in rural and regional Australia that is being underutilised. No doubt we will soon start to see a series of policy proposals that address some of these issues.

Access is a necessary element in bridging the digital divide, but meaningful online experiences do not automatically flow when technology is simply dumped in a disadvantaged community. Access needs to be combined with training that is relevant to local needs. The people for whom the access and training is being provided must also be given the opportunity to use it to tell the stories of their own lives and communities, to create their own online social history.

Access needs to be combined with training that is relevant to local needs.

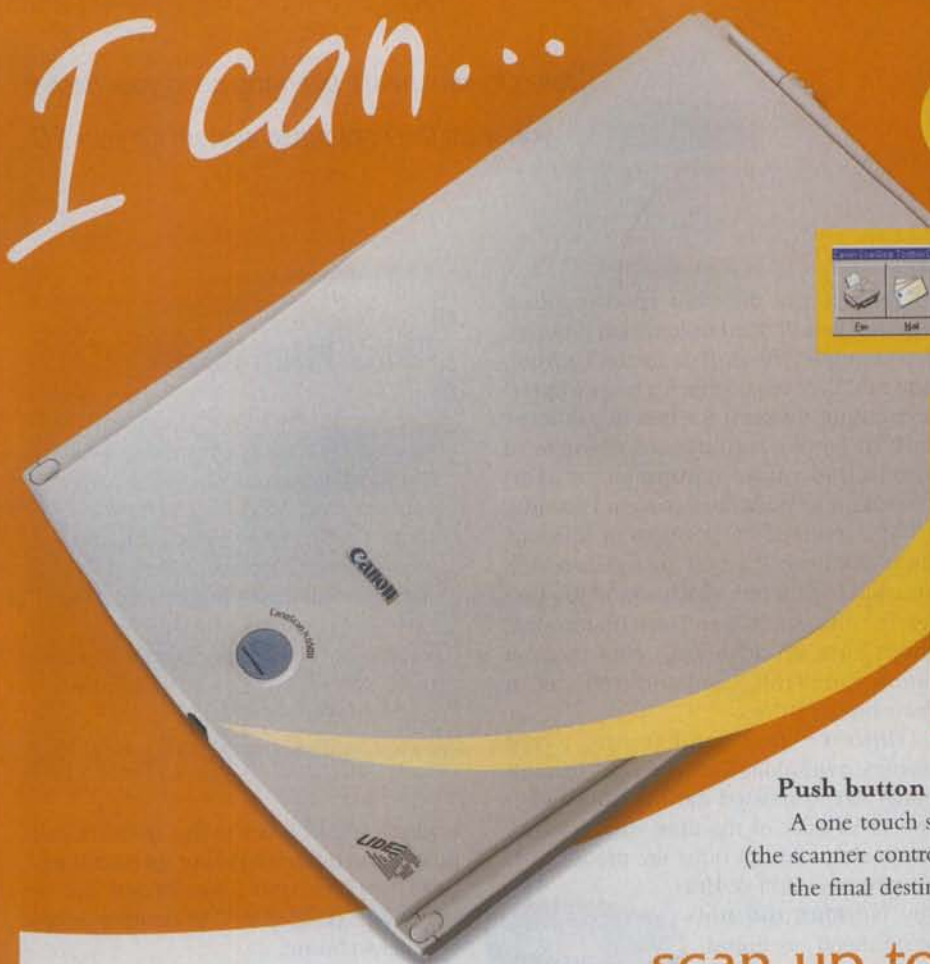
This is a core theme in the work of the Inspire Foundation, where we seek to harness the full potential of the Internet to inspire a generation of young people. Our Beanbag Net Centres project provides Internet access, tailored training and local content development for young people in 10 disadvantaged urban locations. This need is not currently being met by governments. Eventually, we'd like to extend the project to hundreds of locations around the country.

The key element in these projects is the Web sites that young people build and maintain for themselves and their communities. If we can first engage marginalised young people at this level, then later on they will be more receptive to online programs that address issues such as literacy.

Whatever policy proposals are formulated in the run-up to the election, we won't get anywhere until we jettison a myopic focus on the 'information economy' and instead begin talking about a 'connected community' that pioneers new online modes of social service. We need government and community investment in online social infrastructure to make this happen.

Most importantly, we need a fundamental shift, in rhetoric and in thinking, away from the problem towards the solution. ■

I can...



Push button simplicity, unconventionally silent.
A one touch scan button activates ScanGear Toolbox CS (the scanner control software). It lets you select functions and the final destination of your scan such as colour printout (copy), e-mail program, fax, or others.³

...scan up to

600 x 1200 dpi,

with USB for Windows and Mac.

**42
bit input**

High powered scanning with LIDE.
Patented LIDE™ technology delivers optical resolution up to 600 x 1200 dpi with 42-bit colour

input. ScanGear CS and universal TWAIN driver for other applications offer direct scanner control.



Plug'n play USB for Windows and Mac.

The USB interface is compatible with Windows 98/Me/2000 and Mac OS 8.5 or higher.¹ And, because the scanner is powered directly through the USB cable, it does not need a separate AC cable.



"Z-lid", advanced OCR.

This special lid simplifies book scanning and OCR with the bundled Caere OmniPage Pro² converting scanned text into editable data.

Edit and store photos easily.
ArcSoft PhotoStudio 2000 is an easy to use image editor, and ArcSoft PhotoBase creates photo databases. Electronic manuals for Windows and Mac are included.



**CanoScan™
N 650U**
Just \$189^{RRP}

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.



You can...



Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks and CanoScan and LIDE are trademarks of Canon Inc. Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the US and in other countries. Apple®, Macintosh®, Mac® and Mac® OS are registered trademarks of Apple Computer Inc. in the US and other countries. All other trademarks are the property of their respective owners. 1. USB interface can only be guaranteed with pre-installed Windows® 98, Windows® 2000, Windows® Me or Mac® OS 8.5+ and 9.X. Scanner does not include parallel port connection. 2. Includes OmniPage SE for Mac. 3. Fax and e-mail software are not supplied by Canon. Specifications are subject to change without notice. CS0445/9
Canon Australia Pty Ltd ABN 66 005 002 951.

Listen to your heart, but hang on to your cash if you want the right audio system for your PC.

Speak to me

Right now, you are probably using the two-piece speaker set that came with your PC. These speakers can sell for as little as \$6 and often deliver poor sound quality and a chronic hiss. However, the growth of Web site multimedia, MP3s and DVD movies has refocused attention on PC audio systems.

There is a range of surround-sound speaker sets available that can create a wonderful audio experience without blasting you or your bank account away. Many systems with four satellite speakers and a subwoofer are essentially toned-down versions of the audio equipment designed for gamers. These midrange products still create a '3D', surround-sound audio experience — for about half the price. Even better for consumers is the intense (and fluctuating) price competition between retailers and products.

Retailers told APC that it is wise to buy a brand-name system with a reputation for good-quality sound. There are two consistent measures of speaker performance: wattage (volume power) and frequency (sound range). APC compared the price of two popular brand-name five-piece speaker sets. The Logitech Soundman SR-30 system provides 30 watts and a frequency range of 38Hz to 20kHz, while the Creative PC Works Four Point Surround Speaker System (Creative FPS1000) only has 10 watts and a more limited frequency range of 65Hz to 20kHz.

Despite the different specifications, opinion was divided as to which is better. For example, the staff at Harris Technology said that the Logitech's more impressive output makes it the best buy, but the staff at Forté recommended Creative (a specialised audio equipment maker) because it provides better sound quality.

APC received one consistent message from retailers: it's best to test products yourself to find out which sound you prefer. In this respect, retailers with physical shops have an advantage over Internet retailers, and this is generally reflected in their higher prices.

However, first-hand testing is not always available. The Harvey Norman outlet APC contacted did not have either system in stock at the time, and the Dick Smith shop did not have the products set up properly. Staff at Harvey Norman did not recommend one brand over another, and




About Price Watch

Each month, Price Watch examines variations in retail pricing and service. Investigations are conducted anonymously, either by telephone contact with retailers or through pricing details supplied on their Web sites. Prices and specifications provided here are as quoted by retailers; while we assume these are correct, we cannot accept responsibility for errors or omissions.

advised APC to listen to the speakers and judge them according to our specifications. With Logitech and Creative sets out of stock, staff pointed APC to another (more expensive) brand.

Staff at Harris suggested Altec Lansing as a good alternative brand, but when pressed, conceded that it was not worth the premium price. Forté recommended the Altec over both the Logitech and Creative systems for superior sound quality. APC asked if it was worth paying extra for a digital audio system, but was told that most people would not notice the difference. One retailer was impressed by the Logitech system just because it "looks really good".

The design of PC speakers has certainly improved, even if the basic technology has remained the same. The Logitech and Creative systems both have a user-friendly off button and a remote control, so you can quickly adjust the sound for movies or word processing.

The pricier speaker systems often provide nothing more than extra volume, which most people will never use. The best PC speakers create an appropriate sound environment for the space you have. If you are unable to position speakers to create a 360° sound immersion, you should settle for a two-speaker system with a subwoofer. 

Retailer	Contact details	Speaker	Price
Australia Computer Online	www.computeronline.com.au	Creative FPS1000	\$160
Dick Smith	www.dicksmith.com.au	Creative FPS1000	\$198
estore	www.estore.com.au	Logitech Soundman SR-30	\$150.91
Forté Computers	www.fortecomputers.com.au	Logitech Soundman SR-30	\$180
		Creative FPS1000	\$152
Harris Technology	www.ht.com.au	Logitech Soundman SR-30	\$155
		Creative FPS1000	\$210
Harvey Norman	www.harveynorman.com.au	Logitech Soundman SR-30	\$209.96
		Creative FPS1000	\$169
istore	www.istore.com.au	Creative FPS1000	\$209
Microtech Corporation	www.techbuy.com.au	Logitech Soundman SR-30	\$189.30
Parallel Online	www.parallelonline.com.au	Creative FPS1000	\$164.70
Rite Price Computers	www.ompac.net.au/~rpc/index.html	Creative FPS1000	\$151
Tadara Online	www.tadara.com.au	Creative FPS1000	\$160.60
Tandy	www.tandy.com.au	Logitech Soundman SR-30	\$166.31

I can...



Push for film scanning

Scans 35 mm film in slides, and strips in positive and negative format.

Push for photo scanning



Easy to use, with USB.

The CanoScan™ D660U solves diverse scanning needs simply. No adapters or add-on kits. Everything is built-in, and is available with the push of a button. ScanGear Toolbox CS lets you select the final destination of your scan such as printer, e-mail program, fax, copy or others.¹ Or, direct driver control lets you adjust scan size, resolution, and other parameters. The USB interface connects to either Windows 98/Me/2000 or Mac OS systems.²



**600 x 1200 dpi,
24-bit colour input.**

Photo print and text scanning resolution goes up to 600 x 1200 optical dpi with 42-bit colour input capable of capturing more than 4 trillion colours. Data can even be software enhanced to 9600 dpi.³



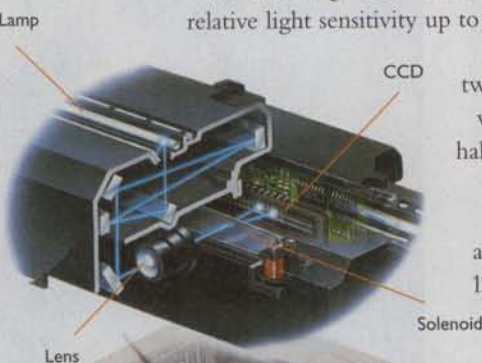
**CanoScan™
D 660U**
Just \$299^{RRP}



...scan trannies with a built-in film adaptor, for just \$299.

Superior 35 mm film scanning with VAROS.™

The scanner cover includes a built-in back light for film that reaches an extra large CCD sensor. Much like high-speed film, it has a relative light sensitivity up to 4 times greater than many 1200 dpi CCDs. It uses Canon's innovative two-pass VAROS scanning technology where the second pass is refracted by half a pixel. It activates automatically at resolutions greater than 600 dpi, capturing data that could be lost on a lesser scanner. The result is 1200 x 1200 optical dpi film scanning in less space and at lower cost.



Edit and store photos easily.

ArcSoft PhotoStudio 2000 provides tools for editing photos, and ArcSoft PhotoBase creates an electronic photo database. Also included are Caere OmniPage Pro for Optical Character Recognition,⁴ plus Adobe Acrobat Reader and PDF manuals for Windows and Mac.

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

You can...

Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks and CanoScan and VAROS are trademarks of Canon Inc. Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the US and in other countries. Apple®, Macintosh®, Mac® and Mac® OS are registered trademarks of Apple Computer Inc. in the US and other countries. All other trademarks are the property of their respective owners. 1. Fax and e-mail software are not supplied by Canon. 2. USB interface can only be guaranteed with pre-installed Windows® 98, Windows® 2000, Windows® Me or Mac® OS 8.5+ and 9.X. Scanner does not include parallel port connection. 3. Enhanced resolution dependent on driver and software used. 4. OmniPage SE edition for Mac. Specifications subject to change without notice. Canon Australia Pty Ltd ABN 66 005 002 951. CS0445/10

Your Letters

Do you have an ISP or vendor experience you'd like to share with APC's readers? It can be good or bad; we want to hear everything! Our contact details can be found at the end of page 64.

If your letter is published, let us know how your complaint progresses. We'll publish updates on as many of these letters as possible.



Dear APC,

I have been a subscriber to Telstra BigPond ADSL since it was first launched, and I have been very satisfied with it. However, there have been several occasions when the service has been down. I find this annoying, as it often happens during the night, when the customer service office is unattended. Even if it is down during the day, Telstra's technicians often take a long time to fix the problem.

I don't know what other customers think, but I am a student and I paid a fortune for the service, and these down times hamper my study and research.

Another annoying thing about Telstra is that it has an acceptable use policy, but it doesn't provide a facility for the users with the 'unlimited' download plan to check their usage. I hope that Telstra BigPond, which claims to be 'the smarter way to the Net', will also be able to act more intelligently and provide its subscribers with a facility that enables them to check their Internet usage, such as the one Optus provides for its subscribers (APC, January 2001, page 24).

Dedi Probudi
Internet



Dear APC,

I would just like to give some positive feedback on a problem I had. I recently purchased a SwannSmart2 modem from a local retailer and somehow misplaced its power cord. When I rang Swann, I received some extremely professional and courteous service from one of its customer representatives.

Without any hesitation or questions, and almost before I could even say thank you, a new power pack was in the post on its way to me. These units can cost anywhere between \$30 and \$40,

There are almost 700 ISPs in Australia, and as **Roulla Yiacoumi** discovers, the first one you join is rarely the last.

Make no mistake about it

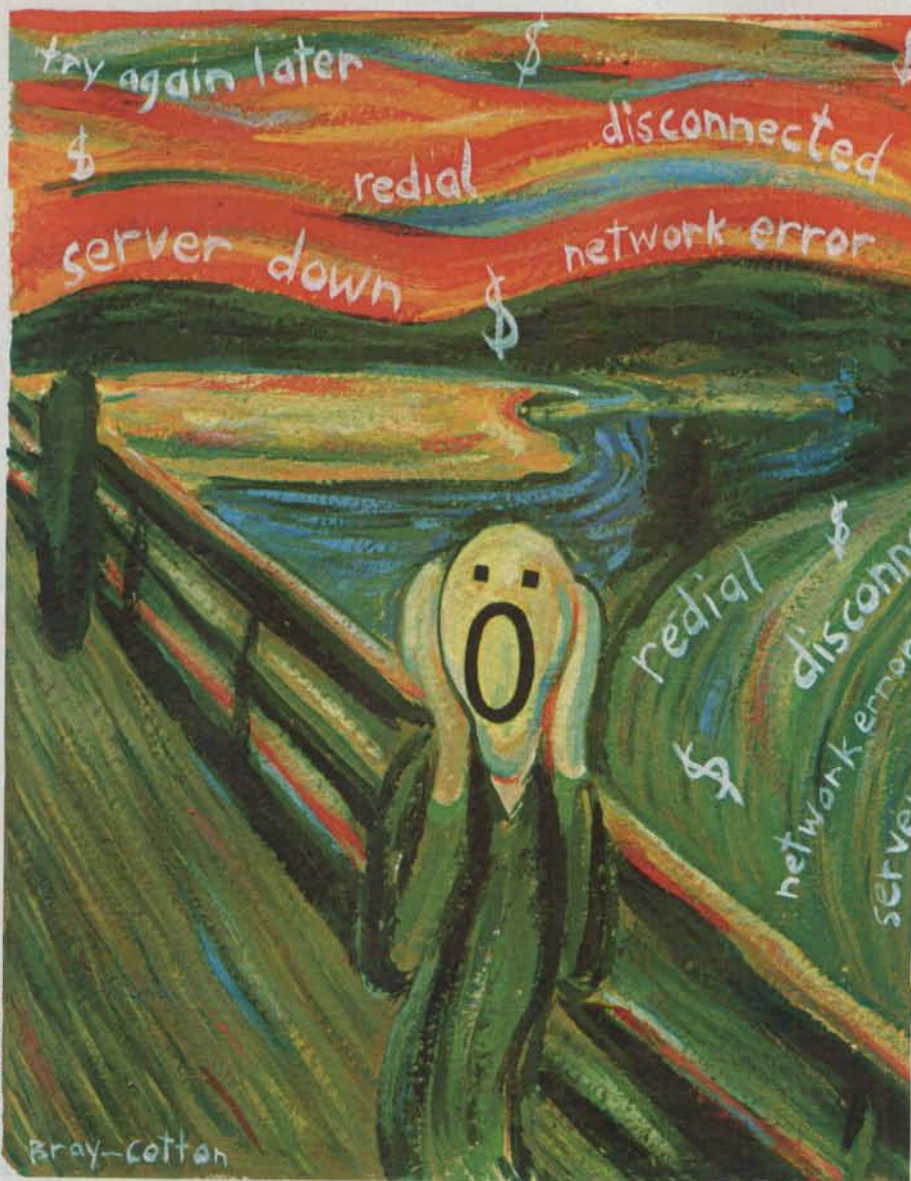


Illustration by Chris Bray-Cotton

At last count, Australia had 696 ISPs. Choosing one can be an overwhelming and confusing task, so where do you start?

Last year, APC's annual ISP Service & Reliability survey found that most people chose their provider based on price. People placed connection speed above price, in only two cases: Telstra BigPond and Optus Internet. These are not the cheapest ISPs around, but they are reliable and well worth their slightly higher prices.

The next most commonly cited reason for selecting an ISP was a personal recommendation. Word of mouth is perhaps

more significant than price alone, because it takes performance into account. An ISP you can't sustain a connection to, or one that is always busy in peak times, is hard to recommend to anyone, no matter how cheap it is. When APC asked respondents to list their reasons for leaving a previous provider, the top three responses were expense, poor connections and poor customer service.

All three of these problems appear in the following reader letter received by APC.

Dear APC,

A few months ago, I began searching for

I can...



Edit and store photos easily.
ArcSoft PhotoBase creates electronic photo albums.
ArcSoft PhotoStudio allows easy image editing.



...scan up to
1200 x 2400 dpi
for just \$299.

Semi-professional 1200 x 2400 dpi.

Canon's patented LIDE™ Technology is a flatbed scanning breakthrough that changes the scanner price/performance ratio.

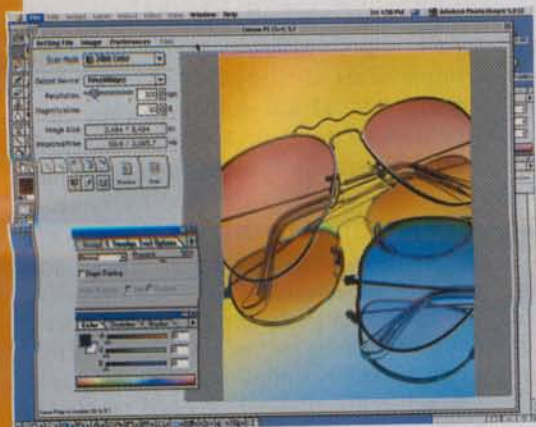
The CanoScan™ N1220U, with 42-bit colour input, demonstrates the evolution of this technology, delivering "semi professional" quality in a super slim design.



42
bit input

Simple, professional quality software.

The one-touch scan button activates ScanGear Toolbox CS to select the destination of your scan such as colour print out (copy), e-mail program, fax or others.¹ ScanGear is also a universal TWAIN/ Plug-in driver that offers direct control for pre-scan settings or enhanced resolution up to 9600 dpi² for applications such as the bundled Adobe Photoshop LE, a limited edition edition of the world's most popular image editor.



"Z-lid", advanced OCR.

This special lid simplifies book scanning and bundled Caere OmniPage Pro⁴ OCR converts scanned text into editable data.



Plug 'n play USB for Windows and Mac.

The USB interface lets you plug in or disconnect your scanner at any time and, because it is powered through the USB cable,³ the scanner does not require an AC cable.



Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

CanoScan™
N 1220U
Just \$299^{RRP}

You can...

Canon

Prices shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks and CanoScan and LIDE are trademarks of Canon Inc. Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the US and in other countries. Apple®, Macintosh®, Mac® and Mac® OS are registered trademarks of Apple Computer Inc in the US and countries. All other trademarks are the property of their respective owners. 1. Fax and e-mail software are not supplied by Canon. 2. Enhanced resolution dependent on driver and software used. 3. USB interface can only be guaranteed with pre-installed Windows® 98, Windows® 2000, Windows® Me or Mac® OS 8.5, 8.6 or 9.0. Scanner does not include parallel port connection. 4. Includes OmniPage SE for Mac. Specifications subject to change without notice. Canon Australia Pty Ltd ABN 66 005 002 951. CS0445/11

Your Letters



and I received it free of charge, without any delay.

I would like to thank Swann for being there for me when I needed assistance. I am an extremely satisfied customer.

*Daniel Windle
Townsville, Qld*



Dear APC,

I have a dialup connection with One.Net and have had no problem with it at all. The customer service I get is great, and as I am an MCSE and a certified Cisco networking associate, I found their knowledge to be great. I never get disconnections or dropouts, and the speed is always at about 51,000 bps, which is the best I have ever had on Australian phone lines.

By contrast, all Telstra has given me is a blurb that they only guarantee a 28.8Kbps connection.

*Pat Hill
Sydney NSW*



Dear APC,

I recently called Compaq support, as I needed to know which site I could download some modem drivers from for my friend, who had upgraded from Windows 95 to Windows 98. After I had been on hold for 20 minutes, a support officer finally spoke to me in what seemed to be close to a foreign language, as it was incredibly difficult to understand what he was saying.

I finally worked out that he was trying to tell me that Windows 95 drivers do not work with Windows 98 (which they do). As a PC support officer myself, I had to laugh. Eventually I thanked him for not being helpful and hung up.

Also, the Compaq Web site says that any support question that is emailed to them will be replied to within 24 hours. Four weeks later, I'm still waiting for a reply.

I finally found the drivers on my own. Compaq may have good products but I believe it really needs to clean up its act on the support side.

*Marco Divitale
Hurstville, NSW*

an ISP that was affordable and had an unlimited download and time plan. I came across AOL, and after several phone calls to the company, I was literally promised:

- a 1800 toll-free POP for dialling up;
- a faster connection than my old ISP;
- a more stable connection than my old ISP; and
- no busy or engaged signals when dialling up

It took a 10-minute phone call to AOL to find out what the 1800 POP was, but I did eventually get it. For the first few weeks, I was very happy with myself, as I was no longer paying for phone calls and I was getting unlimited Internet access.

However, after I had used AOL for a few weeks, my first problem arose; the 1800 number no longer responded. After ringing AOL's 'free' helpline, I was told that there had never been a 1800 POP and there would never be one, even though I had used the number for the last four weeks.

I was therefore forced to use a normal local call POP, which would have been fine, except that I couldn't stay online for more than 10 minutes before the line dropped out, or it stopped responding. Whenever I did get online, the service was incredibly slow. It took me half an hour to do something that I could do in about 30 seconds on my old ISP, On the Net.

So far I have paid more than \$20 for AOL's 'free' helpline, whose technicians are convinced that I am at fault; yet when I connect to my old ISP, the Internet works like a dream again. One help call ended with me not being able to connect at all. I cannot even send a large attachment by email without being disconnected.

Believe me, AOL's log-off 'Goodbye' message has become the most heard word in my life. In the next version of their browser, I think they should change it to: 'You are the weakest link; goodbye!'

*Ben Waugh
Internet*

APC forwarded this letter to an AOL representative who initially expressed a strong desire to address the issues raised in the complaint. We were told that the 1800 number had existed, but that it was only a promotional offer, available for a limited time to Gold Coast subscribers. We were also informed that there were a number of inaccuracies in the reader's letter.

When asked to put this information in a written response, AOL said it didn't

want to reveal personal information about its subscriber.

When APC informed AOL that the letter would be published regardless of whether a company response was forthcoming, we received a letter with the following comment attached: "If you do end up publishing the letter from Mr Waugh, we ask that the member services director's response is published in full and without any other comments or material of which we are not aware." Here is that response.

Dear APC,

We take feedback from our members very seriously. However, while our privacy policy, which is designed to protect our members' personal information, precludes us from responding to the specifics of this letter, we can say that our investigations have found that the claims made are unsubstantiated.

Sincerely,

*David Leek
Member Services Director
AOL Australia*

APC is disappointed that a company with the size and profile of AOL felt that this two-sentence response provided an adequate explanation of the issues raised in our reader's letter.

Interestingly, APC's ISP Service & Reliability 2000 survey received more than four times as many responses from former AOL customers than from current subscribers. Overall, the response from AOL respondents was small; of the 46 respondents who listed AOL as their previous ISP, 47.8% said that they left because of the cost. Two other oft-cited reasons were that a promotional offer had ended (32.6%) and that the connections were poor (15.2%).

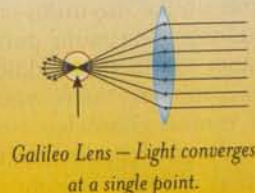
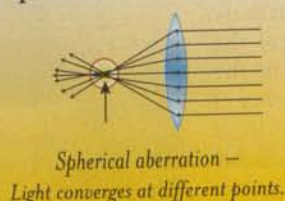
Worldwide, AOL boasts almost 30 million subscribers. AOL doesn't release local subscriber figures, but APC understands that its recent advertising campaign ('The Net made easy') has boosted its subscriber numbers to over 100,000.

Are you a current or former subscriber of AOL? If you are an AOL customer, what do you like and/or dislike about the service? If you are a former subscriber, what made you leave and have you thought about giving AOL another chance following its recent advertising campaign? Write to me at ry@acptech.net. Letters may be edited for length or clarity. Due to the volume of mail we receive, we regret that not all letters can be answered personally.

I can...



High-speed Galileo Lens, 1200 x 2400 dpi.
The easy-to-use unit delivers studio quality 1200 x 2400 dpi optical resolution for almost the same price as many 600 dpi scanners. The five-element, aspherical lens system eliminates distortion. A shortened optical path and wide aperture lens (f-stop=5.5) increase scanning speed and improve signal to noise for a more optically accurate system. A true 1200 dpi CCD sensor is capable of finer detail and more accurate colour.



...scan film and prints up to 1200 x 2400 dpi with 48-bit colour.



ScanGear
Toolbox CS offers
"point and click"
simplicity.

USB and complete software suite.

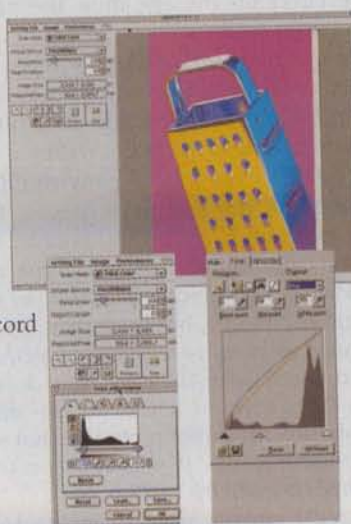
The USB interface connects to Windows 98/Me/2000 and Mac OS systems.¹

ScanGear control software, a universal Twain/Plug-in Driver, PhotoShop 5.0LE and ArcSoft PhotoBase are included for both platforms. ScanSoft OmniPage Pro 9.0 for Windows and OmniPage SE for Macintosh are also included for OCR. Canon PhotoRecord (Windows)/ ImageBrowser (Macintosh) helps users to easily copy, enlarge and print photos.

48
bit input/
colour

48-bit colour input.

True 48-bit input and 42-bit output increases subtle tonal variation and colour accuracy.



Advanced manual controls.

High intensity film adaptor.
The optional film-scanning unit replaces the standard cover for reflective and film scanning, and matches or exceeds the performance of expensive moving light source designs. The light source in the cover uses dual sheets of 3M™ Brightness Enhancement Film plus dual, high-intensity cold cathode fluorescent lamps. It accepts colour negatives and positives in 35 mm, 2 1/4" and 5" x 4" sizes.

Optional
FAU-S12 film adaptor, \$199.^{RRP}



**CanoScan™
D1230U**
Just \$449^{RRP}

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support.

For more information call 1800 021 167.

**3-YEAR
WARRANTY
OPTION**

You can...

Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks and CanoScan is a trademark of Canon Inc. Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the US and in other countries. Macintosh®, Mac® and Mac® OS are registered trademarks of Apple Computer Inc in the US and other countries. All other trademarks are the property of their respective owners. 1. USB interface can only be guaranteed with pre-installed Windows® 98, Windows® 2000 and Windows® Me or Mac® OS 8.5, 8.6 or 9.0. Scanner does not include parallel port connection. Specifications are subject to change without notice. Canon Australia Pty Ltd ABN 66 005 002 951. CS0445/12

Forget staring at a computer monitor, the display of the future could be a pinprick lens that beams the image directly into your eye.

The eyes have it

Neal Stephenson's much-lauded cyberpunk novel, *Snowcrash*, imagines a computer unlike anything currently available. The main part of the system sits in the middle of the room, tracking the movements of the central character, Hiro, and beaming images directly on to his retinas. It doesn't require a clunky screen that gobbles up power, as the 'screen' is in Hiro's own eyes. It's a great design, with much more finesse than a real television or computer screen.

At present, the technologies that most closely resemble Stephenson's vision are the Olympus Eye-Trek and Sony GlassTron glasses, which have small LCD screens capable of 800 by 600 resolution. Wearing them is akin to viewing a "four-foot display, six feet in front of you" and they are supposed to be great for DVDs. However, as good as these glasses are, they have a problem: the display totally obstructs your view of everything else going on around you. They are ideal for watching movies and for immersive PC gaming, but they are too obstructive for anything else.

Other wearable computer prototypes have flip-down lenses that hang in front of the eye, and the computer reflects HUD (heads up display) information on to the lens. This is a better design, but it still lacks the elegance of the device developed by the University of Washington's Human Interface Technology (HIT) Lab.

Taking lens reflective displays further, the HIT Lab (www.hitl.washington.edu) has developed the world's first virtual retinal display (VRD). This is a different form of display, in that it doesn't require you to look at a picture. It beams the image through the tiny aperture of your iris to the retina behind it. The effect is like having a television or computer screen in your eye, and it can be composed of either transparent or solid images.

This is an invasive technology, and as it develops it will encounter criticism similar to that levelled at retinal scanning biometric security devices because of laser damage fears. According to the



HIT Labs Web site and press releases, the beam is tightly focused, but it has no more effect on the eye than the phosphors from a CRT screen.

At the moment, VRD prototypes are large, desk-bound or tripod-mounted affairs, far more cumbersome than future versions are expected to be. Within a few years, VRDs the size of peas could be mounted on the frames of glasses, helmets, computers or car dashboards. The current tripod-mounted prototype can display monochromatic, VGA (640 by 480 resolution) images, but the larger, bench-mounted version is capable of VGA in colour. Both scan at 60Hz, but do not have the flicker of a CRT at the same refresh rate. An earlier prototype that was scrapped because it was too complex scanned at 1,280 by 1,028 pixels.

A VRD can be used to create solid images for gaming or movies, or transparent images for visual overlays. True 3D images with depth can also be created, as the focus of each pixel can be controlled by the VRD. Two slightly different images can be projected into each eye, which is what happens with con-

ventional 3D imagery, but by varying the focus of these pixels, the VRD can create the illusion of depth.

Commercial applications of the technology are being developed by Microvision (www.mvis.com). It is easy to imagine a surgeon wearing a set and being able to view vital information about a patient, such as ECG information, in the bottom right-hand corner as she or he operates, or a 3D overlay of the other organs or the skeleton. Police could have access to Terminator-like HUD information about people that flicks up as they patrol, or a driver's dashboard-mounted VRD could report on traffic conditions, check for the speeds of approaching vehicles or pedestrians, and flash up warnings.

Of course, the VRD is only an output device, and will require equally powerful inputs to function. Wearing a pair of cool VRD glasses isn't much help if the computer that accompanies them has to be carried in a suitcase. However, for set-top boxes and other stationary equipment, they are ideal.

Darren Ellis

It's not just how our software responds to viruses 24 hours a day.

It's how we respond to your call at 3 in the morning.



That's the difference.

At Sophos Anti-Virus, when one of our customers has a problem, we're there to help – whatever the size of the organisation. We provide the best technical support in the business and our experts are on hand 24x7x365 to help our customers stay virus free. Of course we also develop the world's leading anti-virus solution for corporate networks: a multi-platform defence which protects desktops, servers and email gateways.

www.sophos.com.au

SOPHOS
ANTI-VIRUS

Ready, aim,



FireWire



Tired of pottering along in the slow lane of serial and parallel ports? Is even USB too sluggish for you? Then buckle up, as **Alex Kidman** puts the plug and play pedal to the metal with FireWire and USB 2.0.

In an industry obsessed with speed, it's amazing that the PC's serial and parallel ports have lasted as long as they have. USB has been steadily pushing them towards the same graveyard as the 16-bit processor and the 5.25in floppy disk, but even USB is on the slow side for performing tasks such as hard disk and CD-RW access and video editing.

That's where FireWire sprints to the lead. Developed by Apple as a high-speed connection bus, FireWire has been officially adopted as the IEEE 1394 standard. It boasts achievable data transfer speeds of up to 200 megabytes per second (the theoretical limit is twice that), easy setup and the same plug and play capability as USB.

FireWire ports can be found on every current model Macintosh, right down to the new slimline iBook. However, these diminutive ports have only recently started to appear on Windows machines, and they're more likely to be an option than a mandatory inclusion.

FireWire is in the same position USB was a few years back, with many ports gathering cobwebs because of a shortage of devices. Part of the problem was that early support for USB in operating systems was either patchy or nonexistent, especially in Windows. At the moment, FireWire is all but invisible to the mass of Windows users, as only Windows Me has built-in support for IEEE 1394 technology.

Despite being a 'standard', not all 1394 devices are alike. The technology has been implemented in several confus-

ing ways. The main implementation problem is that some FireWire products cut costs by using a four-pin cable that removes the wiring the computer can feed power through to the device, similar to host-powered USB gear. One example is Sony's iLink variant, which appears on their DV camcorders. If you use a device that supports only a four-pin FireWire cable, you'll need a separate power adaptor. It's a case of a small amount of economising causing a large amount of inconvenience.

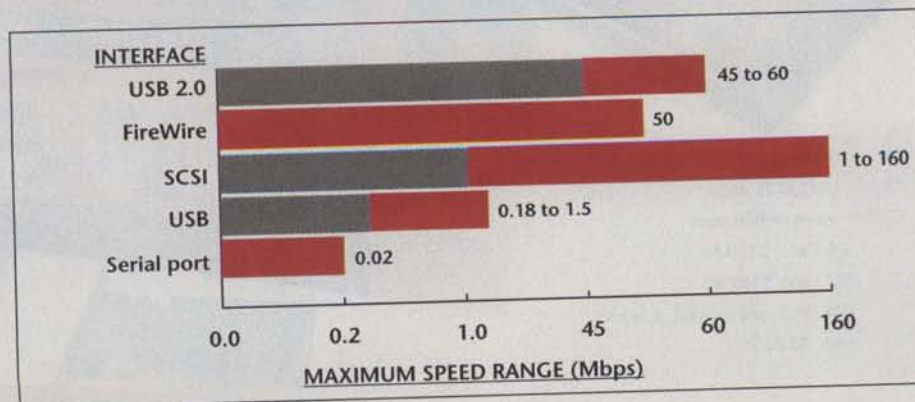
USB 2.0

While USB and FireWire have generally been considered complementary technologies — New-Age versions of the serial and parallel ports — that cosy model has been upset by the arrival of USB 2.0. It is claimed that the pepped-up specification, heavily backed by Intel and dubbed Hi-Speed USB, peaks at 60Mbps, compared to 1.5Mbps for USB 1.1. Hard-

ware makers may be attracted to USB 2.0 because the standard doesn't require the licence fees payable to Apple for the use of 1394.

However, USB 2.0 appears to have faltered at the gate, as Microsoft has decided not to include native support for USB 2.0 in the forthcoming Windows XP operating system. The technology will be supported only by downloading an update to be released at some unspecified time after the launch of XP, which is a little better than having to rely on drivers from hardware manufacturers.

Oddly enough, Microsoft is on the board of the USB Implementers Forum, which is responsible for the maintenance and promotion of the USB specification. Microsoft's claim that there aren't enough USB 2.0 devices to warrant making XP support a priority is a classic 'chicken and egg' situation. However, at this early stage, there are no USB 2.0 devices on the market, so perhaps Microsoft has a point.



FireWire cards

To get FireWire running on your system, you need a FireWire socket. If you've got a new Mac, then you're probably set — Apple's been including FireWire in most Macs for a couple of years now. Otherwise, chances are that you don't have FireWire pre-installed. Windows systems with FireWire coming through APC Labs have been few and far between. However, there's a large selection of cards available, and the installation of a FireWire card, whether it's a PCI card or PC Card, is quite painless on almost any system.

With a Mac, you need to be running Mac OS 8.6 or later with the G3 firmware upgrade, or just running OS 9. With a PC, any system using Windows 98 or later should automatically pick up FireWire cards as IEEE 1394 cards and install drivers

Contact Swann
Phone 1800 066 336
Online www.swann.com.au
Price PC Card, \$199
Hub, \$179



from the Windows CD. That will get the card up and running, but devices are another matter entirely. For Windows 98, Microsoft has an update patch for FireWire devices, which you can download from its site. This all sounds good, except that in APC's testing, certain devices worked well under the patch, but others would only work on a system that *didn't* have the patch. This inconsistency in what's supposed to be a plug and play product is annoying, to say the least.

APC examined cards from Swann, Adaptec and Belkin. There's not much to recommend one card over another on technical merits — all used default drivers and gave equal performance. One of the Belkin PCI cards offered USB ports as well, which would make it a good choice for anyone who wants to add extra USB ports to their system. The cards from Belkin and Adaptec include MGI VideoWave III SE, but the Adaptec card edges ahead with version 4 of the same software.

In terms of price, there's a reasonable difference between the products. At \$180, the Adaptec PCI card is a good \$20 cheaper than the equivalent Belkin card, and you pay extra for the USB/PCI card combo.

In PC Cards, the story is much the same. APC looked at Belkin and Swann PC Cards, and of the two, the Swann package is simpler — just a card and a cable interface for a single FireWire port. The Belkin card has slightly more features, and includes a copy of MGI VideoWave III SE

and a two-port cable. It's probably not advisable to run power from a PC Card connection, but APC was unable to test whether this was supported by either card.

Both cards were priced at just under \$200. Given the extra software and extra FireWire port on the Belkin card, it has to be the better choice.

In theory, FireWire devices support daisy chaining up to 63 devices from a single FireWire hub. In practice, you're unlikely to be able to connect anywhere near that many. In order to keep costs down, many FireWire devices don't include an extra daisy-chaining port. The answer to this is the same as with USB devices — buy yourself a FireWire hub.

There's really not a lot to say about FireWire hubs. In an effort to make hubs more exciting, manufacturers tend to make them with interesting designs, as was the case with the Belkin and Swann hubs. You could be forgiven for thinking that the Belkin hub was some kind of MP3 player. The four ports and the power plug for the supplied AC adaptor are hidden on the back of the unit. An individual light is meant to show the access of each port, but in all of APC's testing, we were unable to get any indicator lights to show up at all.

The Swann hub was similar to the Belkin hub, but it has six ports rather than four. Like much of the Swann range, it looks like something that just fell off the side of an iMac, which isn't necessarily a bad thing. The big differences between the two are the number of ports and the price — the Swann hub is about \$70 cheaper, which is a considerable difference.



Contact Adaptec
Phone (02) 9416 0687
Online www.adaptec.com
Price PCI card, \$180



Contact Belkin
Phone (02) 4325 4666
Online www.belkin.com
Price PC Card, \$199.95
PCI card, \$199.95
USB/PCI card combo, \$249.95
Hub, \$249.95



Picture yourself with a sharper image on UniJet™

Now you can bring out the best in your pictures with new Reflex®UniJet. 100% guaranteed in all inkjet and "Bubble Jet"™ printers, Reflex®UniJet gives you a choice of paper – from Photo Realistic to Matt – for all your quality printing needs.

And Reflex's exclusive Photo Quality Index (PQI) makes it easy to choose the right paper for the job.

From home to school to office – *you can always rely on Reflex UniJet.*



ALWAYS RELY ON

REFLEX
unijet™

*Bubble Jet™ is a trade mark of Canon Kabushiki Kaisha

www.reflex.com.au Freecall 1 800 REFLEX (1 800 733 539)

FireWire storage

Removable storage has come along in leaps and bounds over the past couple of years, and the introduction of the speedy FireWire interface makes things even more interesting. APC examined three different types of FireWire-based removable storage: hard drives, removable drives and drive enclosures. We only looked at one example of each type of product available, rather than a comparative review of every option, as there are loads of FireWire products out there, especially if you're willing to order over the Net.

Removable storage drives are commonplace to most computer enthusiasts, with Iomega currently enjoying the lion's share of the market. FireWire provides great opportunities to removable storage companies, as well as some challenges. It can make faster transfers and less of an impact on system performance. However, FireWire hard disk drives pose the question 'Why pay for a 2G Jaz disk when you can carry around 60G of pure storage power?'.

Iomega's response to FireWire has been to release adaptors for most of their higher-end storage lines. Newer products, such as the Predator CD-RW drive and Peerless drive, have modular FireWire options, and users of older products such as the 250M Zip drive and 2G Jaz drive can purchase adaptors to enable FireWire connectivity. APC took the Jaz FireWire adaptor for a spin to see what it adds to the Jaz experience.

Installation of the FireWire adaptor is much the same as installing any Iomega product: install Iomeware, reboot, connect the device and get going. The FireWire adaptor attaches to the bottom SCSI terminal on the back of the Jaz drive, and then direct to the FireWire port.

APC benchmarked the FireWire Jaz against a similar drive that used a USB interface, and the results speak for themselves. The FireWire Jaz's Business Disk WinMark and High-End Disk WinMark scores of 1,230 and 3,070 respectively aren't incredible. They're about half of what you could expect from a similar size IDE drive. However, compared to the USB drive, there's a big step up in performance. The USB Jaz drive only managed a Business Disk WinMark of 724 and a High-End Disk WinMark of 1,240, between half and one-third of the FireWire drive's scores. If you're in a Jaz environment and need to move disks around, then the investment in FireWire certainly seems justified.

As already mentioned, the challenge to devices such as Jaz drives is in fully

portable hard disk drives. There are two types on the market: fully portable drives in enclosures, and enclosure kits without the hard drives.

The appeal of an enclosure kit is obvious: take an existing drive and make it both portable and protected from the external environment. APC examined enclosures from Addonics, but there's a wide range of these devices available. The Addonics 3.5in drive enclosure is an interesting mix of technology. In essence, it's a drive caddy of the type that's been commonplace for years, complete with a 3.5in bay enclosure, but that's not used in the FireWire configuration. A port adaptor attaches to the back of the enclosed drive, which can then run PC Card or FireWire cables using another adaptor cable. One thing FireWire can't do is make a specific IDE drive faster, as APC discovered when benchmarking the sample 2G drive. Its High-End Disk WinMark and Business Disk WinMark scores were almost identical, whether run from the FireWire or IDE bus. The appeal here is in the portability. Using a caddy like this externally doesn't provide a lot of shock support, but it's better than carrying around a naked drive.

If you're really serious about FireWire and drives, you can go the whole hog and install a complete drive. APC tested a 45G Fantom drive and was very impressed by the end results. The drive beat everything else in our tests, with a Business Disk WinMark of 4,050 and a High-End Disk WinMark of 12,200, easily the match of the best internal IDE drives out there. The only strike against the Fantom drive is its size. At 5.5 by 19 by 26.5cm, it's one of the largest drives APC has ever examined. The size does affect its portability; when the drive's larger than some notebooks, you're unlikely to want to carry it from venue to venue, but it would be all right for short distances.



Contact Iomega

Phone (02) 9925 7700

Online www.iomega.com

Price Iomega Jaz FireWire adaptor, \$229



Contact Bits

Phone (02) 9310 4199

Online www.bits.com.au

Price Fantom 45G portable hard disk drive, \$881.61



Contact Bits

Phone (02) 9310 4199

Online www.bits.com.au

Price Addonics FireWire hard disk drive enclosures, \$273.89

WE MAKE DREAMS A REALITY



Leadtek®
We Make Dreams a Reality

WINFAST GEFORCE 3 TD Third Generation Nvidia GeForce3 Nfinite Fx (Tm) Gpu. On Board 64Mb 4Ns Ddr Memory Lightspeed Memory Architecture High-Performance Hardware Anti-Aliasing **WINFAST GEFORCE2 MX SH MAX** (128Bit Memory Interface) Mx-400 Chipset, **WINFAST GEFORCE2 MX 64** (64Bit Memory Interface) Mx-200 Chipset, 32Mb 7Ns Sdr, Tv Output **WINFAST GEFORCE2 MX/DH PRO** Single/Dual Head (128Bit Memory Interface) Mx Chipset, 32Mb 6Ns Sdr Single D-Sub+Tv Output, Fansink **WINVIEW PCI SMART TV DEVICE JUNIOR** Tv Instant Viewing, Easy To Use Remote Control, Built-In Speaker With Amplifier. **WINFAST 4X SOUND CARD** Hrtf-Based 3D Positional Audio, Supporting Directsound 3D And A3D Interface, Dls-Based Wavetable Music Synthesizer, Supports Direct Music With Fiber Optic Module & Cable 64Mb 6Ns Sdr, Tv Output, Hardware Monitor **WINVIEW PCI 2.1 TV TUNER/CAPTURE CARD** Remote Control & Fm Radio Video Capture, Supports Teletext Ntsc/Pal + Software Pack, 32-Bit Pci 2.1 Bus Mastering.



NSW Office
■ 02 9648 0888
Fax: 9648 0999
51 Hill Road
Homebush Bay
NSW 2140

VIC Office
■ 03 9646 4388
Fax: 9646 4133
41 Brady Street
South Melbourne
VIC 3205

QLD Office
■ 07 3511 7288
Fax: 3511 7299
2 Mayneview Street
Milton
QLD 4064

BCN Technology

www.bcntech.com.au
sales@bcntech.com.au

FireWire CD/DVD/CD-R

Several of the drives APC has examined recently support FireWire. The Archos Mini CDRW (APC April, page 100) comes in a FireWire variant, and Iomega's Predator CD-RW drive (APC May, page 40) has an optional FireWire interface, but you do have to pay extra for it.

APC looked at several drives from Addonics, a manufacturer of FireWire products, as well as a new FireWire drive from Sony.

If you just want a playback mechanism for DVD and CD titles, Addonics offers a slimline DVD drive, the Pocket DVD. Installation of the DVD was a breeze, as the FireWire bus picked it up immediately. The Pocket DVD comes with PowerDVD for DVD playback. It was as smooth as you'd expect for a

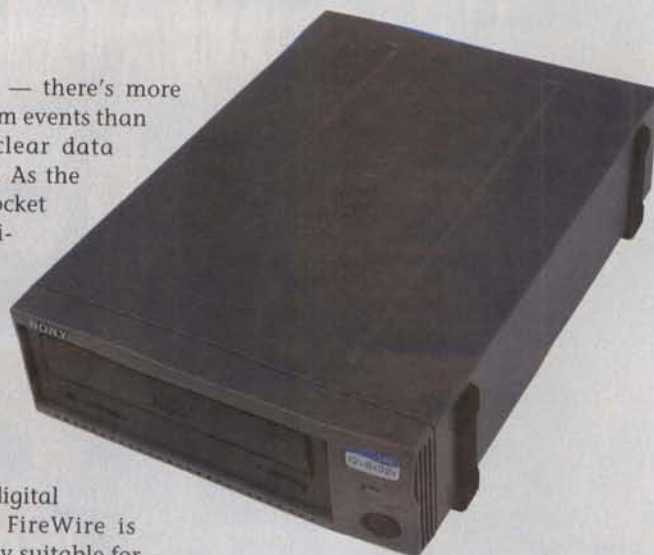
software-based player — there's more interference from system events than from not getting a clear data stream from the drive. As the name suggests, the Pocket DVD is small — basically the same size as most external notebook CD drives.

The FireWire interface is well suited to DVD playback; after all, DVD is just MPEG-2 encoding, the other side of the digital video spectrum that FireWire is meant to be particularly suitable for.

The very similar Pocket CDRW also conforms to the current preference for smaller sizes. It's only capable of 4x writing — not the fastest portable drive on the market, but at that speed it should be all but impossible to encounter a buffer underrun. Its 4x writing is also because it supports a variety of interfaces. APC looked at the FireWire interface, but it also supports PC Card connection, which is much slower. Adaptec Easy CD Creator 4 is included, which seems to be de rigueur with CD-R drives. At 4x, discs took just under 20 minutes to burn. The Pocket CDRW compares quite well to other portable models. It's smaller than most (barely larger than a CD) and the tray-loading model means it handles sudden bumps better than the cheaper lid loaders. It requires power to eject the tray, but in a pinch you can use the emergency release mechanism with a trusty paperclip, in the same way you can with much larger drives.

Even though 4x is acceptable in a CD burner, if you crave speed, then heftier options are readily available. APC examined larger and faster units from Sony and Addonics.

In the Addonics range is the Mobile DVD/CD-RW. 'Mobile' is obviously a subjective term in the Addonics office; it's conceivable that you might be able to fit their pocket drives into a largish pocket, but there's no such hope for their mobile drive, a full-size external DVD/CD-RW unit. It supports 12x burning and 8x DVD reading, and comes with Easy CD Creator and PowerDVD. DVD playback was acceptable, but on our test system (a hefty 1GHz Pentium with 128M of RAM)



Contact Sony
Phone 1800 017 669
Online www.sony.com.au
Price CD-RW Drive, \$799

it had a tendency to stutter every once in a while, something the smaller pocket drive didn't seem to do. It burnt all of our test discs flawlessly in just over six minutes each.

The competing Sony drive, the CRX1600LEK, has many of the same specifications, lacking only DVD playback. This drops about \$200 off the price, which is appealing to those on a budget. As with the Addonics drives, you work with Easy CD Creator 4. It wouldn't seem possible, but the CRX-1600LEK is even bigger than the Mobile Addonics drive. You could conceivably carry the drive around an office environment, but you're not going to want to slip it into your notebook case — unless you count carrying housebricks around as a hobby.

All of the CD-R drives APC looked at required external power supplies. In theory, they could draw power directly from the FireWire bus, which would lessen the number of cables and make them more portable. However, in the case of CD-RW drives, this isn't a good idea — if there's a glitch in the power supply, you just create a coaster and little else. Similarly, although the FireWire bandwidth is quite high, and a lot of devices do support daisy-chaining, it's not a good idea to try it with a CD-RW drive, as the buffer will empty quickly. There are drives on the way that support Sanyo's proprietary BURNProof technology, which should at least help with that issue. In the meantime, APC suggests that you stick with a single drive on a single bus for any burning attempts.



Contact Bits
Phone (02) 9310 4199
Online www.bits.com.au
Price Addonics Pocket DVD, \$827.55

Addonics Pocket CDRW, \$919.59

Addonics Mobile DVD/CD-RW, \$1,181.94



USB 2.0: Are we there yet?

The first USB 2.0 product is Adaptec's USB2Connect PCI card, which adds four USB 2.0-rated ports to your PC. Installation was exceptionally simple. Adaptec's drivers installed instantly on APC's test system running Windows 98, and the four ports (three external, one internal) were recognised without fuss. The USB2Connect comes with a single USB 2.0 cable, but with no available hardware, it was impossible to test this.

When we evaluated the backwards compatibility of the USB 2.0 sockets and drivers with existing USB devices, it performed admirably, picking up every device we installed. This means you won't need to throw out your lower bandwidth devices if USB 2.0 ports become commonplace.

The real issue in plugging in older USB devices is more about bandwidth than backwards compatibility. USB 2.0 is designed to distribute the available bandwidth between devices. Maintaining a share of, say, 60Mbps bandwidth across four USB 2.0 devices shouldn't be all that problematic; each device can be given 15Mbps, depending on the draw of other devices. Start introducing products at 1.5 or 0.18Mbps, and the sharing gets trickier. USB 2.0 can support asynchronous

transfers, so slower devices aren't over-allocated, but already some design reports suggest that this may not work as smoothly in the real world. However, without devices to test bandwidth sharing on, this remains conjecture.

USB 2.0 still has a way to go. Belkin has a USB 2.0 hub coming, and several of the devices that APC has seen recently promise USB 2.0 connectivity soon. Having added FireWire adaptors to its Jaz and Zip drives, Iomega may follow with USB 2.0 adaptors.

Intel has a keen stake in USB 2.0 and is likely to start building USB 2.0 ports onto its Pentium 4 motherboards soon. This could mean a repeat of the original USB two-step, where plenty of systems came fitted with USB ports, but no devices were available to run from them. USB's saviour was undoubtedly Apple's decision to make it the interface of choice for the insanely popular iMac, but with USB 2.0 set to lock horns with Apple's own FireWire, APC doesn't expect to see USB 2.0 on Macs any time soon.

If the Macintosh market remains off limits, Intel will need to lean on Microsoft, which has been sluggish to move on USB 2.0. Citing a lack of hardware and the desire to keep Windows XP as stable as possible, Microsoft has only committed to supplying reference drivers as an add-on download through the Windows



Contact Adaptec

Phone (02) 9416 0687

Online www.adaptec.com

Price USB2Connect PCI card, \$180

Contact Belkin

Phone (02) 4325 4666

Online www.belkin.com

Price TBA



Update facility. This means no built-in support for USB 2.0, which will make USB 2.0 harder to set up out of the box. This will lower consumer confidence, which in turn erodes USB 2.0's base of users. Meanwhile, FireWire seems more attractive, a prospect on which Intel and the USB Implementers Forum are none too keen. **DM**

"Thanks again James, without your Acer storage unit, I never could have stolen all that company data... but don't you think that a taxi getaway would have been a little less conspicuous?"



Acer offers a complete range of storage solutions including CD-ROM, DVD-ROM, CD-RW and even CD-R media. So, if you need to back-up some data, create an image library or make an audio disc of your favourite MP3 songs, Acer products make any storage application possible. And the new models feature the revolutionary 'seamless technology'. It allows you to bookmark the copying process at any point, eliminating dreaded buffer underrun.

Call (02) 8762 3350 or visit acercm.com.au

Acer Communications & Multimedia Australia Pty. Ltd.

acer
we hear you

Balancing the Books

Wines Ltd ended at 5.00p
second financial position. Directors
consider the recommendation
of Collamaster Wines Pty
to make a takeover
offer and intend to accept
voting power. Directors
close of the offer. T
approximately 75% of Wines F.

[illegible]

It's your money; isn't it time you took control of it?

Stephen O'Brien puts accounting packages through their paces to find the ones that really make sense of your dollars.

It's been a big year for accounting systems. The introduction of the GST and \$200 rebates had many firms rushing to upgrade their software. The big winner was MYOB, whose software has long been synonymous with small business accounting. However, MYOB is by no means the only worthwhile accounting package.

APC readers are no doubt familiar with Quicken's CashBook and QuickBooks, and there are many other highly respected accounting software suppliers, including Attaché and Sybiz, whose products have been refined over decades.

In this annual roundup, APC considers accounting systems targeted at three levels of business: very small operators who only need to track cashflow and the GST; those who also need to manage the daily demands of small business; and businesses requiring the flexibility to manage a medium-scale enterprise with highly diversified operations.

In conducting this review, APC judged bookkeeping or accounting systems targeted at the micro level on their ease of use. Most sole traders have enough trouble satisfying the requirements of the GST and the BAS without struggling to master their accounting software as well. Quicken CashBook and Cashflow Manager are ideal. At this level, a complete purchasing module is rarely necessary — the chequebook suffices — and neither package covers inventory or payroll management. However, both products produce invoices and track the resultant receivables, and they ably assist you in meeting the requirements of the GST and the BAS or IAS.

For the typical small business, the accounting requirements are a little more complex. The proprietor often runs the accounts, but many small businesses also employ or subcontract bookkeepers, experienced in running more complex packages. Typical features include full receivables, payables, inventory and pricing control. The ability to produce quotes and turn them into invoices at the click of a button is also welcome. Good accounting systems at this level should customise themselves to the business, so

everyday tasks take very little time. They should also save the operator from the complexities of double-entry accounting, and allow transactions to be entered at the most basic general-ledger level.

The three packages reviewed in this section (QuickBooks, Attaché Catapult and MYOB Premier) fit this bill. They all offer the same basic features: general accounting, purchases and sales, inventory, and optional components that are chosen when the package is purchased. They have startlingly different interfaces, and each is packed with time-saving shortcuts. They turn the accounting system into a business tool that is used every day, rather than relegating it to a once-a-week 'catch up with the books' event. Not every small business requires a computerised payroll, but it makes a huge difference, especially when dealing with more than a handful of staff. Each of these systems can be purchased with optional payroll, but the level of integration varies.

Small to medium-sized enterprises of between 15 and 500 staff require robust multiuser systems with highly detailed financial control. The packages that target this market usually include complex features such as pricing matrices, multi-location inventory, electronic payment options and complete document management. APC tested three packages in this category: Sybiz's Vision, FinancePlus and Attaché Business Partner.

APC set basic requirements for each of these packages. First, they must run under Windows. The transition from DOS to Windows-based accounting software took some time, but there's no doubt that it has happened. Unless you have a legacy reason for continuing to use DOS, it's wise to change over to the stability and security of a Windows 2000 system.

APC also considered usability, looking for elements such as an interface that highlights the features important for day-to-day operations and hides those that are only required once a quarter or year. An intuitive interface is important in all software, and in accounting systems it lessens the likelihood of inadvert-



Illustration by Tara Axford



tent errors, which can be a nightmare at the end of the year for small businesses. A clear interface means that operators of the accounting system don't need to be instant experts.

Multiuser capability is also an important factor, as long as it has been correctly implemented. The record-locking schemes used by MYOB and QuickBooks can lead to inventory problems. Consider two sales operators building an invoice. They both need to sell the same item, but the inventory shows just one in stock. Should that item be deducted from the inventory when it is first noted in the invoice, or when that invoice has been confirmed? In MYOB and QuickBooks it is deducted only upon confirming the invoice. This means availability isn't known until the invoices have been stored, and at least one invoice always misses out. A better system, and one that is used in all the larger packages, is to place the inventory items in a holding basket as soon as they are noted on an invoice. When that invoice has been con-

firmed, they're permanently removed from the inventory. In the meantime, true availability is reflected throughout the system.

Choosing an accounting system is a very personal decision. The basic feature sets are almost identical at each level. However, the way you use the packages day to day will vary quite widely. For example, out the front you might want a fast point of sale with a simple, stripped-down feature set, but out the back your requirements could be quite different. Make sure the package provides the features you need right now, with room to grow in the future.

Most of the programs reviewed here offer some form of trial version that can be downloaded from the Web. It's a good idea to put these trial versions through their paces. Setting up a new company file can sometimes prove a chore, so you might be better off working with one of the sample files that come with most trial packages.

Questions to ask yourself include, can you easily find the basics? Are the screen layouts self-explanatory? Try entering a couple of invoices and making a few purchases. These should present little challenge, but try correcting one of the invoices, as if you'd made an error. Was it too easy? It shouldn't be. You don't want people being able to make changes without leaving a full audit trail. What about the management information systems? Is there one place you can go to, to take the full pulse of your business, or must you track down a bunch of different reports and status screens? How easy would it be to move from your existing system to the new system? Can you easily import your current client list and inventory? Does the

Who to blame . . .

If you're looking for someone to blame after a long night wrestling with the complexities of double-entry bookkeeping, direct your curses at Luca Pacioli, a 15th century Venetian monk with a mind for mathematics and a penchant for profits. He wrote a number of seminal works, but his most famous was *Summa*, a wide-ranging mathematical treatise in which, in just one small but important chapter, he codified our system of double-entry bookkeeping. The ledger system he developed revolutionised accounting practice 500 years ago, and is just as important today.

system read the file format or a simple CSV file? Test it out with the trial package before you commit. Is the security sufficient, and can you block off the more sensitive parts of the package from particular users in a multiuser environment?

It doesn't take much imagination to realise that the last year has been a rather difficult time for accounting software vendors. Some coped better than others, but it's now clear that the GST, like the Y2K crisis before it, prompted a welcome update to the accounting systems we increasingly depend upon.

Above all, don't forget to speak to your accountant before you decide on one system or another. Any savvy accountant should be able to accept your records in an electronic format, and your accounting system needs to be compatible with theirs.

EDITOR'S CHOICE

Australian Personal Computer

Mid-range enterprise: FinancePlus 3.2

Possessing all the features a midrange enterprise requires, including bulletproof security and auditing, FinancePlus is the ideal accounting system at this level of business. Its multiuser features make it easy to lock data-entry staff out of specific functions, and its customisable displays

provide managers with a constant update on the data they need.

Small business: MYOB Premier 5

This package lacks some of the panache of QuickBooks, but delivers a stable, sturdy and highly functional

bookkeeping platform in an easy-to-use package. Its local development has kept it ahead on the GST curve, and this latest update smooths off many of the product's rough edges.



Entry level: Quicken CashBook 8.2

With more features than many 'dedicated' accounting packages, and at approximately half the price of its nearest competitor, Quicken CashBook is a great choice. It excels for its ability to

handle business finances, and also for its contributions to personal finance management. Don't use it if you need serious purchasing or inventory, but for all other situations it is a great place to start.



XEROX
DocuShare®
Knowledge Sharing Software

Need to Share Information and Knowledge?



Incorporate DocuShare into your workplace today and start creating, accessing and sharing information.

Easy to Use

- Create and share Calendars, URLs and Bulletin Boards
- Save and view files created in popular office applications directly in DocuShare
- User maintained content and structure

Information Management

- Eases burden of sending e-mail attachments
- Full usage reporting and tracking
- Manage multiple revisions with a history of file of who made what changes when

Simple Deployment and Administration

- Minimal IT overhead
- No client software or plug-ins required
- Platform and Web Browser independent
- Runs on NT and Sun servers

Built on Internet Standards

- Built-in security and version control
- Concurrently search across multiple global DocuShare servers
- Control the visibility of content right down to the individual document level

With DocuShare, sharing information is as easy as storing it on your hard-drive and finding it is as easy as browsing the web.

xerox software solutions



EFFECTIVE DOCUMENT MANAGEMENT CAPABILITY

For more information on DocuShare visit us on the web at: www.fujixerox.com.au/software or call 13 14 12

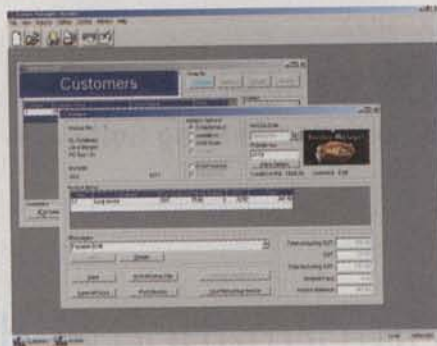
Copyright © 2001 Xerox Corporation. All rights reserved. DocuShare® is a trademark of Xerox Corporation. All other trademarks are the property of their respective companies and are recognised as such. While the information is correct at the time of printing Fuji Xerox Australia Pty Ltd ABN 63 000 341 819 reserve the right to change the specifications of the equipment/software described herein without notice.

Entry level accounting software

Cashflow Manager 2.2

This is one of the easiest to use accounting systems APC has ever seen. It's even better than the ATO's free E-Record software. It took just one minute to create a new set of books, and from the moment the first screen opened, we were able to begin recording transactions. If you've ever run a manual accounting system, you'll feel completely at home in Cashflow Manager.

There are six main components: receipts, payments, budget, reports, cash reconciliation and bank reconciliation. All receipts and payments are recorded in a simple table newly generated each month. The total payment for each transaction is recorded once and then split between one or more columns. This is an effective method that provides flexibility and ease of use. GST is automatically calculated (and assumed to be included in the price), and totals for each column are noted at the lower edge of the screen and in the monthly summary report. The only problem is that columns (which act as expense or income categories and accounts in other packages) are viewed by scrolling horizontally along each row until the correct one has been found. This



▲ The invoicing module adds full receivables management to Cashflow Manager.

makes using many columns impractical.

Reconciliations were easy, but this section of the product could use a facility for recording bank charge and tax. Budgeting was a breeze. The optional invoice manager (one of the most intuitive around) handles receivables and statements, and is flexible enough to generate highly personalised invoices. However, it costs \$110 — quite steep compared to Quicken CashBook.

Despite its ease of use, APC experienced some frustrations using Cashflow Manager. As mentioned, the receipts and payments screens use a column format, but unlike the

columns common to most spreadsheets, tables and databases, it isn't possible to move between them with the Tab key. You have to press Enter, because pressing Tab gives you an alert to 'Save the file' and then returns you to the previous column. According to the manufacturers, this will be changed in the next version. Cashflow also crashed frequently when run with Microsoft Office 2000 under Windows 2000. The solution was to remove Office and Cashflow Manager and reinstall both, making sure Cashflow Manager was installed first.

Cashflow Manager isn't available from retailers, but with 64,000 copies purchased so far, it is obviously popular — probably because it is suitable for beginners.

- Pros** Easy GST tracking
Suitable for nonaccountants
- Cons** Bugs and interface frustration
Expensive invoicing module

Contact Cashflow Manager
Phone (08) 8275 2020
Online www.cashflow-manager.com
Price \$249

Quicken CashBook 8.2

This package is so good, it prompted Microsoft to do something it rarely does: pull out of a market. Quicken CashBook combines all aspects of personal finance, from chequebook balancing to investment management, along with a range of small business features such as an invoicing/receivables utility, GST tracking and BAS preparation. It has an extraordinary range of features, and comes at a great price.

CashBook is quite different from its stablemate, QuickBooks. It started as a chequebook balancer, and most of its screens are based on a savings account register. This gives novices a familiar starting point. Icons arranged along the bottom of the screen provide plain English descriptions of common tasks, and more complex features only become apparent when exploring the interface.

CashBook's combination of personal and business features works quite well, but it isn't exactly self-explanatory. For example, transactions can be assigned to almost any number of income and expense categories, and further classifiers mark them as business or personal transactions, but you need to know



▲ The invoicing system built into CashBook provides complete control over receivables.

about hierarchical categories or transaction classifiers before you begin. The good news is that if you operate under a basic business name or partnership, you'll find it quite easy to combine business and personal transactions in one file. This provides an overview of your financial situation, but also isolates business expenses at the end of the year for tax purposes.

Its latest release is GST-ready, but some snags may still catch the unwary. For example, changing a transaction after GST has been applied can cause peculiar errors in the BAS. Also, the tax

table could have been better thought out. A code 'S' is used on GST purchases (presumably a hangover from Sales Tax), but a code '4' is used on GST sales. On the whole, the GST and BAS functions don't integrate smoothly with the rest of the system.

The good news is that invoicing and receivables are solid — if you can stay on top of the tax codes — and nothing can match CashBook's other features, which include full portfolio management, financial planning and a superb range of drill-down reports and graphs.

CashBook is an excellent product, but you need to invest some time mastering its more complex features before using it in a business environment.

- Pros** Full feature set
Very flexible
- Cons** Poor GST implementation
Steep learning curve

Contact Reckon
Phone 1800 360 641
Online www.quicken.com.au
Price \$165

boundless navigation



Cordless MouseMan® Optical



Optical Sensor

It's wide open. The horizon is limitless. But to reach your destination, you need precise control. Cordless MouseMan® Optical is the optimum solution. With the combined power of **cordless** and **optical** technologies, you can operate your computer on the deck of a sailboat, on your leg, on just about anything. No traction balls. No cords to hold you back. Just cordless optical freedom, from Logitech.®

www.logitech.com



Small business accounting software

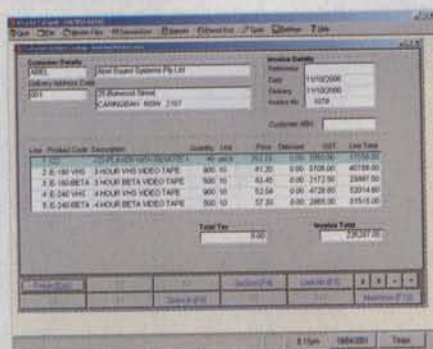
Attaché Catapult 1.02

Attaché isn't new to the accounting software scene. Like Sybiz, it has been building bulletproof systems since the days of DOS. Its latest product, Catapult, builds on the best aspects of its DOS system in a Windows environment.

The highly scalable Catapult grows as you grow, and can handle up to 100 users. The purchase price might seem expensive for a small to medium-sized business, but the package provides many high-end features such as head-office accounting, multiple delivery addresses, multicurrency, superb inventory management, barcodes and departmental accounting. However, some basic features such as dot-matrix printing and report customisation are only available through add-ons that cost about \$330 each. Other modules provide multiple warehousing, point of sale and payroll.

Catapult's menus are arranged hierarchically. The main sections appear on the left and the subsections appear on the right. This format differs from other accounting systems, and has several problems.

Catapult is very easy to use. Each screen is well laid out with the most important fea-



▲ Function keys and big, easy-to-read screens allow for speedy data entry.

tures always in view, and handy secondary items and screens are not far away. Without doubt, these are the best data entry screens APC came across in our review. Order entry and updating is extremely fast, and once you enter a particular screen, there is little need to shift your hands from the keyboard to the mouse. Standard function keys provide fast navigation through each module.

However, there is no provision for assigning a master keystroke to each module. For instance, the only obvious means of moving from the invoice entry module to the customer payments module is by shifting back

to the mouse, returning to the transactions list, double-clicking the payments folder, and then double-clicking Enter Payments. There is a strange disparity here between the brilliant keyboard-oriented data-entry screens and the mouse-oriented hierarchical menus, and it just doesn't work. A simple toolbar on the screen could provide one-click or one-key access to the most-used modules, and a customisable one would have been even better.

Catapult is at the higher end of small business accounting systems, but is cheaper than Vision. It also requires less training, and is easier to get going quickly. However, moving between modules is frustrating.

- Pros** Fast keyboard data entry
Multiuser licence
- Cons** Confusing keyboard/mouse changes
Essential features only available in add-on modules

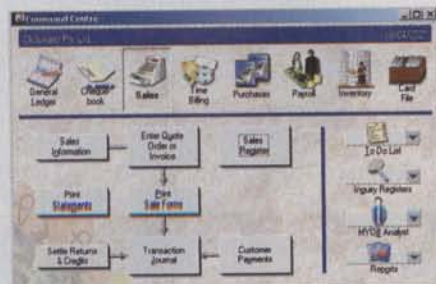
Contact Attaché Software
Phone 13 30 45
Online www.attache.com.au
Price \$2,420

MYOB Premier Accounting 5

Over the past few years, MYOB has garnered a reputation for solid accounting products. Its latest release, reviewed here in early-release form, promises to streamline its accounting software and make it more efficient to use. MYOB Premier Accounting 5 is almost identical to MYOB Accounting Plus 11, except for the addition of multiuser capability.

MYOB Accounting was one of the first products, along with QuickBooks, to be structured around a self-explanatory graphical interface, which helps you follow the flow of money, orders and payments through the system. The Command Centres provide quick access to the software's everyday features, and act as a central console through which many more accounting tasks or inquiries can be performed.

One of the problems with earlier releases of MYOB Accounting is the difficulty in finding particular transactions. This is solved in the new version with Sales and Purchases Registers. These are access points to all current transactions. For example, the Sales Register lists all quotes, orders, open invoices, returns and credits, closed invoices and stored recurring transactions. The new buttons



▲ The MYOB interface has a new look, but the layout has only a few additions.

arranged along the bottom of the register screens prompt you with the next likely step. For example, the list of invoices includes a button to immediately apply a customer payment.

MYOB Accounting has many of the advanced features of packages costing 10 times as much, including pricing matrices, time billing, electronic payments and integrated payroll. The entire package typically sells for less than the cost of a single module from the next tier in accounting packages.

Communications play a larger part than ever in this latest release. The new invoicing screen includes a menu that can forward a quote, order or invoice via fax, or email by seamlessly converting

documents to Adobe Acrobat format. Purchase orders can be forwarded the same way. This method produces results as good as any printed form, and it will certainly impress a switched-on supplier or client.

The card file also acts as a powerful communications centre, and has a range of customisable Word templates with excellent mail-merge and debt-collection facilities.

Its general journal entries are bound to confuse the accounting illiterate, but MYOB Accounting will impress many switched-on businesses.

- Pros** Numerous features in an easy-to-use package
Excellent integration with Microsoft Office and email
- Cons** Some difficult concepts

Contact MYOB
Phone (03) 9222 9777
Online www.myob.com.au
Price MYOB Premier Accounting (multiuser), \$1,095
MYOB Accounting Plus (with payroll), \$447



Gimme Wonder!

Never miss your favorite TV show again!



With ALL-IN-WONDER® RADEON™ you don't just watch TV on your PC you control it. The new TV-ON-DEMAND™ time shifting feature lets you pause live television, create your own instant replays and digitally record programs on your PC. Don't miss the final play of the game – put the action on hold while you answer the phone. And with the TV Guide® Interactive Program Guide you watch TV on your own terms – it's your Internet updated, personal TV listings guide.

Search for programs by title, category, performer or date and tune in instantly. Talk about reality TV, this is it!

ALL-IN-WONDER® RADEON™ gives you incredibly fast 3D graphics, plus interactive TV, video editing and much more – all in one upgrade card. Just say GIMME WONDER and you can have it all. Visit ati.com today for more ALL-IN-WONDER® facts and feature information.



servex - www.servex.com

NSW: Best Byte (02) 9436 0788 Leading Pacific (02) 9763 7688

VIC: BestByte (03) 9561 8777 Omega (03) 9800 3444

QLD: Compuworld (07) 3846 7588 **SA:** Leader Computer (08) 8221 6222

Servex Australia Pty Ltd. ACN 076 438 808 Copyright 2000, ATI Technologies Inc.

All rights reserved. ATI, ALL-IN-WONDER, ALL-IN-WONDER RADEON and RADEON are trademarks and/or registered trademarks of ATI Technologies Inc.



Visit ati.com

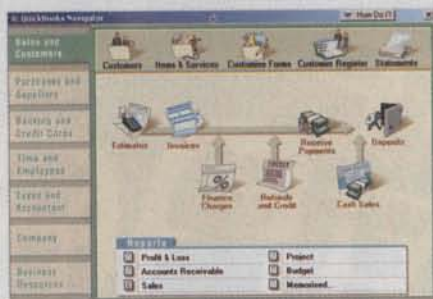
servex
service for excellence

Quicken QuickBooks Pro 8

QuickBooks doesn't have as many heavy-hitting features as MYOB, but it provides everything a typical small business could want in accounts management, as well as plenty of help for novices. Its EasyStep Interview covers topics as diverse as basic business structure, inventory creation and your GST requirements. By the end of the interrogation (which takes about 40 minutes), you have a superbly-designed QuickBooks Navigator, and from there things only get easier.

The Navigator is divided into seven main sections. These cover sales, purchases, banking, time tracking, taxes, company data and business resources. Each section provides access to activities, reports and lists. For example, under Purchases and Suppliers you can record purchase orders, enter and pay bills, and receive items into the inventory. You'll also find a range of purchasing-related reports, and easy access to lists of suppliers, items and services, as well as purchase orders. There is limited inventory management, but it isn't suitable for businesses with a catalogue of more than a few hundred items.

QuickBooks makes business accounting as foolproof as possible. Solid online assis-



▲ Few accounting systems make financial management as easy as this.

tance is available throughout (and it more than replaces the printed manuals), and cue cards pop up when required. Automatic reminders also ensure you never miss an important payment or receipt.

QuickBooks handles the GST well, produces a competent BAS and, unlike MYOB, easily combines service and inventory items on one bill. QuickBooks' reports are some of the most extensive of any package APC reviewed. Also impressive is the drill-down feature, which allows you to get to the transactions behind the totals. This makes error correction a breeze.

QuickBooks has several standout features, including an excellent job or project costing system. Its integration with Quicken QuickTrack allows staff to record

estimates, invoices and business expenses. Staff can also take payments with their Palm Pilot while on the road, and HotSync with QuickBooks when they return. If you bank with the Commonwealth, you can download statements, pay bills and transfer funds from within the software, and even back up your data to online storage. Like MYOB, this program can also link with an optional point-of-sale module for easier management of cash registers.

What does it lack? Chiefly, a truly integrated payroll. However, the employee management system tracks gross wages and withholdings. The \$250 QuickPayroll Pro add-on ties in well and can easily handle several hundred employees at a time.

Pros The best interface APC has seen
Online banking

Cons Poor inventory management
Very basic mail merge

Contact Reckon

Phone 1800 360 641

Online www.quicken.com.au

Price \$480

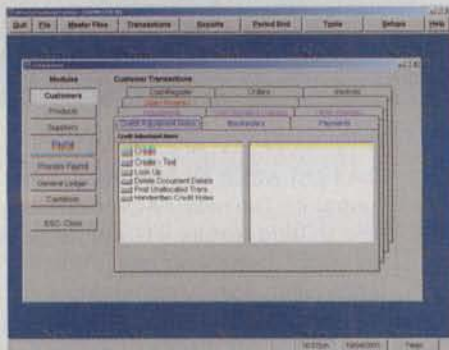
Mid-range enterprise accounting software

Attaché Business Partner 1.22

With an installed base of over 15,000 in the Asia/Pacific region, Attaché Business Partner is the most popular accounting system for the midrange business. It is similar to Attaché Catapult, but is pitched at bigger companies.

At \$5,400, the Business Partner Value Pack is expensive, but it combines many of the most popular Attaché modules previously only available as add-ons. It is licensed for five concurrent users and has the ability to handle up to 100. The price also includes complex pricing matrices, multiple delivery addresses and unlimited departments, as well as the dot-matrix printing option that costs extra in Catapult. Attaché also includes some of the smaller modules such as Customer Notes. Further add-on modules are available, including payroll at \$1,000 and point of sale at \$500.

Business Partner suffers from the same interface deficiencies as Catapult — it can take up to five clicks mouseclicks, or many more keystrokes, to get to the invoice creation screen from another part of the program. Many of Catapult's other



▲ It's not always easy to know where to look in Business Partner. (Note the Invoices tab at the back of the tabbed dialog box.)

limitations also apply. Business Partner doesn't make good use of the available screen space, but the fast order entry on entering a screen is very useful.

Aside from Catapult, Business Partner provided the most complicated methods for extracting vital balance sheets and profit and loss data. It seems that both Attaché products take a rather archaic batch-oriented approach, as if the developers prefer you to enter data, print a report, and then sit around the board-

room ruminating on the results. It's an engine room rather than a control room.

Despite this, Business Partner offers all the features a midrange business needs. It may cost a small fortune in additional modules, but facilities for everything from Palm handheld add-ons to an innovative electronic document delivery and tracking system are available. For a further \$1,000, Business Partner can plug its software into Attaché Optimist business diagnostic software that evaluates hypothetical scenarios using figures and dependencies extrapolated from your Business Partner records.

Pros Has everything a midrange business needs

Cons Stale screens
Lack of live feedback
Inefficient interface

Contact Attaché Software

Phone 13 30 45

Online www.attache.com.au

Price \$5,400

FinancePlus 3.2

An accounting system that starts at \$5,000 needs to be good. The software should provide functionality at all levels, from basic order entry through to a complete management information system, and it should never leave you wondering how you'll get around a design limitation in the software.

FinancePlus is just such a system. It provides all the control a business needs, with robust audit trails that include userid, fast and effective transaction search procedures, and a vast range of cleverly arranged functions that never leave the operator wondering how to accomplish a transaction. It has been built from the ground up to handle foreign currency. This makes it easy to pay bills using foreign or local amounts, and to automatically convert those funds as they pass through the books.

FinancePlus is built just like an old-fashioned application: all of the screens are Windows-based, every button acts as you would expect it to, and the icons can't be misinterpreted. There's a lot of information on each screen, but unlike some of the other packages reviewed here, each field always serves a clearly identified purpose. The application also offers extensive drill-down features from any list, making it easy to

Management Information System		Date Range		2000-2001	
Account	Balance	Actual	Budget	Variance	Ratio
Current Account	111,100.00	111,100.00	111,100.00	0.00	1.0000
Bank of America	40,000.00	40,000.00	40,000.00	0.00	1.0000
Bank of Australia	71,100.00	71,100.00	71,100.00	0.00	1.0000
TOTAL	151,100.00	151,100.00	151,100.00	0.00	1.0000

▲ Need information? The management information screen provides plenty.

jump right through to the original transactions. It interfaces extensively with other software, including Excel for reports and Word for mail merge.

The software has been built using the Access database engine, and its extensive reporting system can be extended further using Crystal Reports or Microsoft Query. It can also display a management information screen if you want to keep an eye on all aspects of your business.

Head-office payments, multilocation inventory, multiple shipping addresses, automatic foreign currency gain/loss adjustment, single-click payment reversals, electronic payments, and emailed invoices and statements in Acrobat format are standard, along with a host of other features. However, there are no payroll capabilities,

not even in an add-on module.

FinancePlus can also talk to an e-commerce plug-in that sits between your desktop and a remotely-hosted Web site, and provides full order entry, inventory updates and more. It will be interesting to see where this system goes. It seems more suited to B2B than consumer sales, but it has a lot of potential.

FinancePlus only has a handful of optional modules, but these include two that should be standard. Job costing and price matrix are built into all the other accounting packages, but with FinancePlus they start at \$1,500 each on a three-user licence, and increase by \$150 per additional user. That's on top of the \$900 per extra user that is charged for the standard edition.

Pros Has almost everything

Cons Desperately requires payroll

Job costing and price matrix should be standard

Contact FinancePlus Software

Phone (02) 9922 4866

Online www.financeplus.com.au

Price \$5,000

Multistation printers
Receipt printers
OPOS
LCD touch screens
POS software referral service
ElitePOS PCs
Barcode software
USB connectivity
Cash drawers
Programmmable keyboards
Drivers
Barcode printers
Integrated POS terminals
Customer displays
Barcode scanners
Rolls and ribbons
Hospitality terminals

DH Technology: the complete POS hardware source

For a free catalogue on CD-ROM, call us on 02 9477 1999, or visit our website: www.dhtechnology.com.au



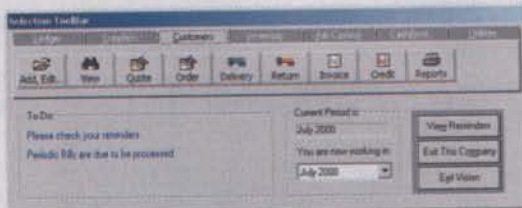
Sybiz Vision 2.4

You run an expanding business. You have big plans. You want accounting software that won't limit your growth, but you don't want to pay \$10,000 just to get started. If this is you, take a look at Sybiz Vision.

Vision provides all the functions of a medium-enterprise accounting system at a small business price. It forms a software base that starts with a single user, but can grow to handle hundreds across multiple locations.

The price begins at \$1,495 for a single-user Vision Retail POS Small Business Package, including point of sale, report writer, general ledger, debtors and creditors, purchase orders and inventory. Other combinations of modules are available for the wholesale and service industries. Once your annual turnover hits \$1 million (monitored internally by Vision), you need to pay another \$1,495. These licensing steps continue up to a turnover of \$5 million, where the software moves into an unlimited mode. Additional users can be added at any stage for a further \$700.

This is a unique licensing system for the small-to-medium enterprise. The software



▲ Vision-central: This handy toolbar provides fast access to each module.

provides almost every feature you could conceivably need without the up-front cost associated with such complex software. Additional modules, such as those required for ecommerce, multilocation inventory and payroll, can be added at any stage.

If there is any downside to Vision, it is this: large companies can afford to hire specialist staff to run their accounting software, but small businesses can't, and Vision is so complex that it takes a lot of time to learn. This is not software that can slot into the business environment at a moment's notice.

Many of the screens are made up of a myriad of text boxes, not all of which are required, and it takes the novice some time to become familiar with those that are. Some screens don't quite work as expected. For example, Vision wouldn't

allow us to cancel or exit from the invoicing screen when the customer code field contained a code that wasn't part of the customer database, even though no other details had been entered. This frustrating behaviour doesn't take long to get used to, but it will certainly tie up an inexperienced operator on a busy day.

To its credit, Vision is remarkably sophisticated. Its ability to grow with the business, and the ease with which this is facilitated by the licensing scheme, makes it an excellent choice. Check out the trial, and make sure you have the time to get to know it before you begin using it for real.

- | | |
|-------------|---|
| Pros | It grows as you grow
Useful licensing scheme
A lot of powerful features |
| Cons | Takes time to learn
Modular approach can get expensive |

Contact Sybiz Software
Phone 1800 683 783
Online www.sybiz.com.au
Price \$1,495

Tax: Now it's personal

The GST and BAS may have stolen the limelight this past financial year, but the world of personal tax has not been stagnant. We've compiled a few tips to help you through this taxing time.

Fast refunds

Look out for the return of e-tax, a 3M download available from the ATO's Web site (www.ato.gov.au); go to the Individuals section and look for the icon) and some ISPs. It makes individual lodgement fast and secure, and promises a 14-day turnaround on your refund. In 1999, it took about 10,000 returns. The next year, it proved so popular that the ATO's e-tax Web site was overloaded for weeks at a time. We recommend you get in early.

Depreciation

Last year, the ATO changed the depreciation schedules on computers. The effective life of computers is now three years for laptops and four years for other computer types. Previously, it was five years for all types. It's unclear where this leaves handhelds.

Dial 'n' charge

If you're an individual nonbusiness taxpayer and you owe the tax office less than \$10,000, you can now pay some or all of that debt by phone. The arrangement was trialled in Victoria and Tasmania during the last financial year, and now includes all other states.



▲ The main ATO tax tools page

Dial 13 25 50, tap in your tax file number, enter the amount of the debt, set a payment schedule (weekly, fortnightly, monthly or in a lump sum), the amount you want to pay, and a start date. You'll be notified of any interest charges at the same time and receive confirmation by mail.

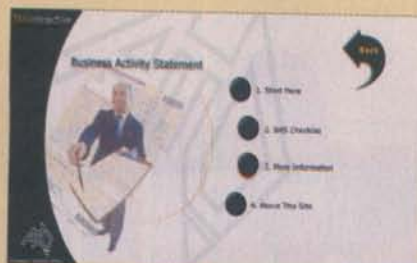
Sharing the caring

A new ruling relating to the shared care of a child came into effect this financial year. If you cared for a child at least 10% of the time, you're entitled to an equivalent share of the Family Tax Benefit. As best we could establish, this does not apply to computers with shared logins, even those that have been depreciated to \$0.

Cool tax tools

APC is impressed by just how much the ATO has embraced the Internet. Now, you can find a whole bunch of online tax tools in one handy location. Just go to www.taxreform.ato.gov.au/general/taxi/main.htm, or look for the taxinteractive link in the Individuals section at www.taxreform.ato.gov.au.

- **BAS Guide:** Did your tax agent hold out on your BAS Guide? Take a look at the online version here.
- **E-Record:** This is a guide to the ATO's free electronic cashbook. It shows you how it works, how to download it, and how to use it.
- **Business Navigator:** This is taxation 101. After just a few questions, the



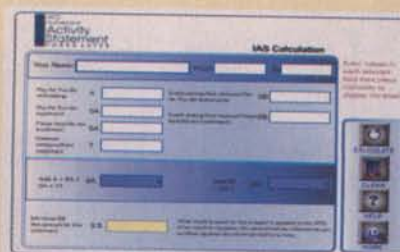
▲ BAS Guide

navigator prepares a checklist of links to the information you need, including topics such as allowable business expenses, employees and record keeping. All of this information is available elsewhere on the ATO's site, but the Navigator makes finding it easy.



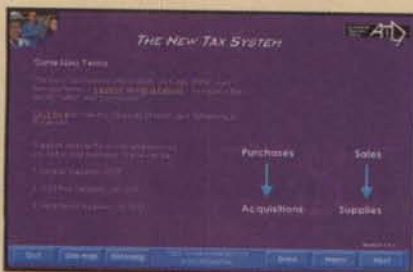
▲ Business Navigator

- **BAS and IAS Forecasters:** Use these interactive guides to work out how much you should be remitting with your BAS or IAS.
- **BAS Options:** This guide tells you which fields on the BAS you need to sweat over and which can be safely ignored.



▲ IAS Forecaster

- **Keep your cash flowing:** With a front page apparently inspired by *Burgo's Catch Phrase*, this training system is really just an interactive brochure. If you're still finding the new tax system a bit confusing, you should make sure you take a look.



▲ E-Record



▲ BAS Forecaster



▲ Keep your cash flowing



COMPUTERS & PARTS LAND PTY LTD

Website: www.cpl.net.au E-mail: cpl@cpl.net.au Trading Hours: 9:30am-7:00pm Fax: 03 95628781 Tel: 03 95487088
E & O. E. Images for illustrative purposes only, names & logos remain the property of their Owners. A surcharge will be applied for credit card payment. Prices subject to change.

CPL's Commitment

- Customer's satisfaction
- Best value to customers
- Quality goods & service
- CPL - wholesale to the public with factory outlet at premises

CPL

- has all the items advertised in stock
- provides 1-2 hours turnaround to assemble your computer
- provides most competitive prices
- has full range of parts & peripherals
- has friendly experienced staff
- delivers anywhere in Australia

Customize Your Own Computer

Can you save hundreds of dollars on a new PC?

Would you like to build up a PC to suit your special needs such as editing, graphics, music, internet, games, professional jobs?

Do you want to have a peace of mind knowing that all the parts used on your system are 100% genuine?

Yes! We can help you! Talk to our professional people. Customize your own computer at the cost of parts price or we can assemble the system for you at \$50 only.

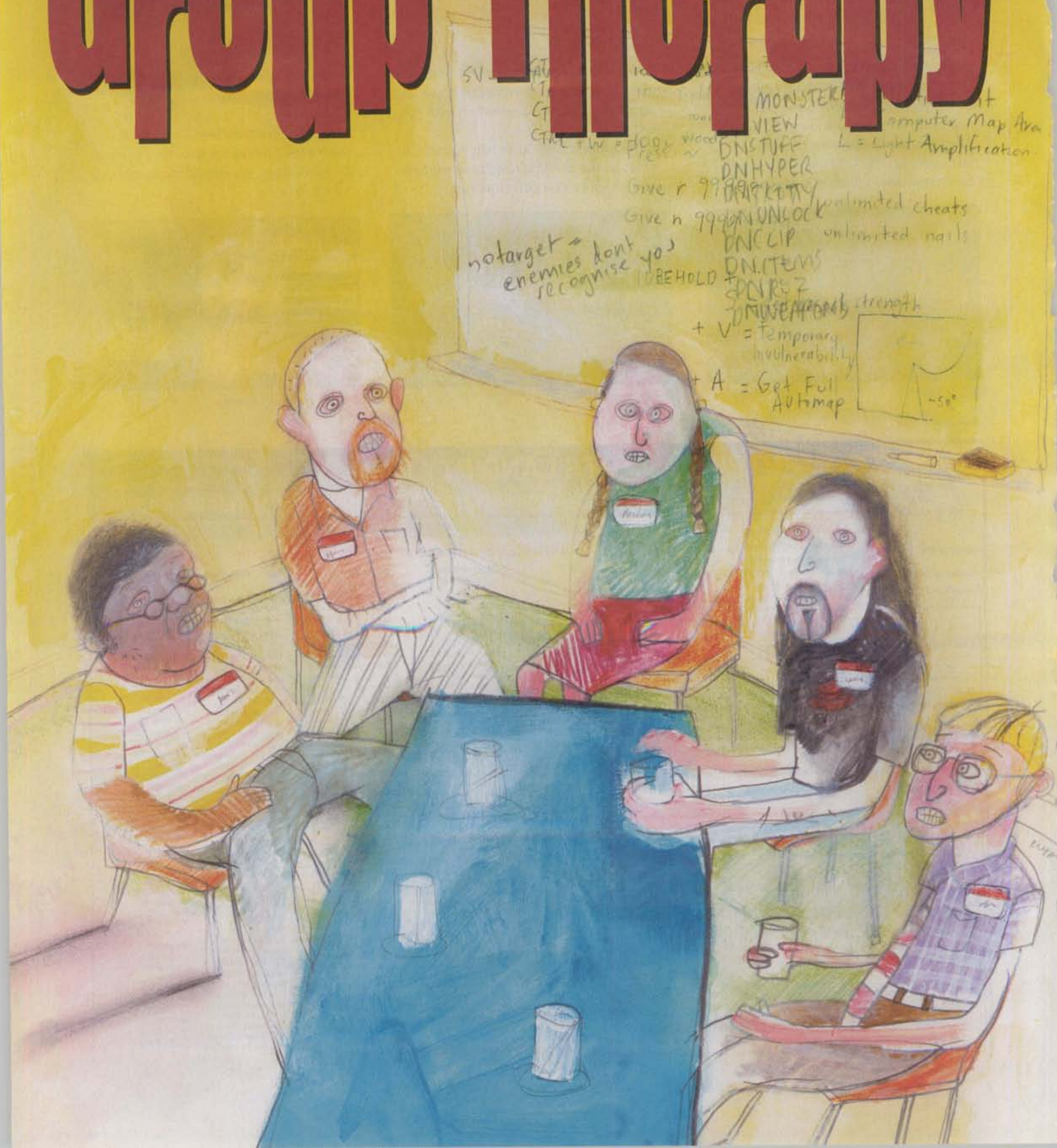
Celeron766 \$1039 PentiumIII733 \$1149 PentiumIII866 \$1249 * Asus CUSI MB * 128MB PC133 SDRAM * 10GB Hard Drive * 32MB SIS VGA * 32bits 3D Sound * 52 x LG CD-ROM * 15" Samtron Monitor	Celeron766 \$1299 PentiumIII733 \$1399 PentiumIII866 \$1499 * Asus CUV4X-C MB * 128MB PC133 SDRAM * 20GB Hard Drive * 32MB TNT2 M64 V/C * Creative Vibra 128 S/C * 52 x LG CD-ROM * 17" Viewsonic Monitor	PentiumIII866 \$1899 PentiumIII933 \$1979 PentiumIII1000 \$2059 * Asus CUSL2-C MB * 256MB PC133 SDRAM * 60GB Quantum/IBM * 75GB IBM ATA100 * 52 x LG CD-ROM * 17" LG Monitor
Duron900 \$1339 Athlon1000 \$1499 Athlon1200 \$1549 * MSI Turbo MB * 128MB PC133 SDRAM * 20GB Hard Drive * 32MB TNT2 M64 V/C * 32bits Sound * 52 x LG CD-ROM * 17" Viewsonic Monitor	Athlon1000 \$1949 Athlon1200 \$1999 Athlon1300 \$2099 * Asus A7V133 Raid MB * 256MB PC133 SDRAM * 30GB 7200rpm HD * 32MB GeForce MX * Creative Live Value * 52 x LG CD-ROM * 17" LG Monitor	P4 1.4GB \$2399 P4 1.5GB \$2499 P4 1.7GB \$2749 * Asus P4T MB * 128MB RAMBus * 40GB 7200rpm HD * 32MB GeForce MX * Creative Live Value * 52 x LG CD-ROM * 17" LG Monitor

All systems include: KB, Mouse, Speaker, FDD. Changes can be made to above systems.

Full Range of Computer Parts & Peripherals Available

CPU Celeron 700 / 733 Celeron 766 / 800 Pentium III 733 / 866 Pentium III 933 / 1000 Pentium4 1.3/1.4/1.5G Duron 800 / 850 / 900 Thunderbird 900 / 1000 Thunderbird 1200/1333 Hard Drive 5400rpm 10GB Quantum 20GB Q / WD / IBM 30GB Q / WD / IBM 40GB IBM / Quantum 7200rpm 10GB Quantum 20GB Q / WD / IBM 30GB Q / WD / IBM 40GB Quantum/IBM 60GB Quantum/IBM 75GB IBM ATA100 Scsi HD 16GB Quantum 10K 18GB Quantum 10K 18GB Seagate 15K Laptop HD 510/20GB for Laptop RAM 16GB EDO RAM 32MB SD PC66/100 128/256MB RAM Bus 64/128MB for Laptop Kingmax available Case Midi Tower ATX Full Tower ATX Aspire KF45, LX45 Aspire HQ45, HQ95 Aspire HQ08 Full	Motherboard for Intel CPU Asus CUSI Asus CUV4X-C Asus CUSL2-C Asus P4T, Intel D850 Abit SA8, SA8 Raid Abit VP6 Dual CPU Gigabyte 6VXC7-EX Gigabyte 6WMACT-1 Gigabyte 60X Intel815 Gigabyte 60XMTX-1 for AMD CPU Asus A7V1-VM Asus A7V133 Asus A7A266, A7M266 Abit KT7A, KT7A Raid Gigabyte 7DXE4 Gigabyte 7ZM, 7ZMM Epox 8KTA3, 8KTA3+ Intel KR266 Raid MSI K7T Pro2A MSI Turbo, Turbo Raid CD-Writer Creative 32084 IDE NEC 32864 IDE LG 32864, 321218 IDE Ricoh 328B, 7083A IDE Ricoh 321218 7120A Ricoh 321210 7125A Ricoh 401610 7200A Roho 248/44 8060A Ricoh 321210B 9120A Sony 32864 148E Sony 321218 160E, 160S Teac 32864 IDE TDK 401610 IDE Plextor 321210 IDE Plextor 321210 Scsi Plextor 401610 IDE Yamaha 248/44 Scsi Yamaha 401610 IDE Yamaha 401610 Scsi Kodak 84/44 USB Ext. komega 64/44 USB Ext.	VGA Card 8MB AGP / PCI 16MB VoodooIII 3000 PCI 32MB TNT2 M64 AGP 32MB TNT2 M64 PCI 32MB GeForce MX 32MB Hercules Goliath MX400 64MB Hercules Prophet II 64MB Hercules GeForce II 32MB Matrox G400 SH 32MB Matrox G450 DH 32MB Asus 7100 MX TV 32MB Asus 7100 Combo 32MB Asus 7700 Deluxe 64MB Asus 7700 Deluxe 32MB Creative GeForce MX 32MB Creative GeForce GT5 32MB Winfast GeForce MX 32MB Winfast GeForce GT5 64MB Winfast GeForce 400 64MB Winfast GeForce II 64MB Voodoo5 5500 Pixelview TV Gigabyte Firewire Card Sound Card 32bits PCI Sound Card Creative Vibra 128 Creative Live Value Creative Live iLayer 5.1 Creative Live Platinum 5.1 Hercules Game Theater XP Terratec 5121 Digital	56K V.90 Modem Netcom Ext. / Int. Netcom USB / Roamcell WebExel Ext. / Int. Swansmart Turbo Ext. Acer, Creative External Kingmax PCMCIA Networking 10, 10/100 Net Card Netgear 10/100 3Com, Intel 10/100 4port USB Hub Spant 10base Hub 4port 10base Hub 4port USB Hub 4port 10/100 Hub 4port 10/100 Hub Switch Kingmax PCMCIA 10 Kingmax PCMCIA 10/100 Camera Logitech Quickcam Kodak DC-325 Kodak 2100/3400/4800 Creative Webcams Creative Webcam go Mini Creative Webcam go Plus Storage Zip 100/250MB Internal Zip 100/250MB External Orb Internal Drive Orb External IDE / Scsi Scsi Card built 2935 LVD built 2935 Ultra wide Adaptec 29160/39160 K1 CD/DVD-ROM 44 x Pine CD-ROM 48 x, 52 x Sony CD-ROM 32 x Teac Scsi CD-ROM 10 x Pioneer Scsi DVD 12 x Toshiba DVD-ROM 16 x Pioneer DVD Tray 16 x Pioneer DVD Slot Videocom Decoder Card	Monitor 15" Sonytron 15" IBM Touch Screen 17" Aoriga 17" LG 775H 17" LG 795 Flatron 17" Hitachi CM151 17" Hitachi CM252 17" Mitsubishi 1710G 17" Mitsubishi 1706FD 17" Philips 101P 17" Samsung 7530F 17" Sony E220 19" Aoriga 19D 19" Hitachi CM771 19" Sony G420 21" Sony G520 Printer Canon BJC 2100 Canon BJC 5400 Canon BJC 6200 Canon i8500 Laser Epson Stylus 480 Epson Stylus 580 Epson Stylus 680 Epson Photo 720 Epson Stylus 880 Epson Stylus 1270 HP Color 640C HP Color 840C HP Color 930C HP Color 950C HP Laser 1200 HP Officejet G85 Scanner Canon 640F Canon 650F Canon 660F Canon T220U HP 3300C HP 3400C HP 4200C HP 5300C Epson 640U Epson 1280U
--	--	---	--	---

Group Therapy



*There has been an explosion of multiplayer games in the last five years, and in the process, it has become a favourite pastime for many PC owners. **Kevin Cheung** and **Daniel Gardiner** look at what makes this genre tick, and take the best games on offer for a spin.*

The Internet age has given us many things, not least of which is an abundance of multiplayer games. It started with id Software's Doom, the first landmark multiplayer PC game, and has blossomed into a vast array of titles specifically designed to be played over a network or online.

It was the 1996 release of Quake that really saw online gaming take off. Doom had its fair share of fan communities and fan-based maps, but these were nothing compared to the levels of fanaticism inspired by Quake. Legions of players came online and banded together to create new levels and even completely change the mechanics of this landmark first person shooter. The extreme malleability of Quake paved the way for future games and encouraged game designers to support and nurture online gaming communities.

Bandwidth has always been a significant issue for online gamers, but games are now specifically designed to cater for most modems. Still, it pays to have a good ISP, or even to fork out for cable, as there is a very noticeable difference between a good connection and a bad one.

APC has divided the games into three categories. Each features the four best games and their progeny in each category.

First person shooter (FPS)

FPS games helped popularise multiplayer gaming on the PC, and they are second only to MMORPGs (Massively Multiplayer Online RPGs) in the total number of players. Their graphics, weapons and level design have become more sophisticated over the years, but the gameplay's basic mechanics have remained essentially the same. Deathmatch games, where players act as individual entities, are still very popular, but an increasing number of players are opting for team-based matches. The online communities surrounding FPSes are absolutely huge, and there are thousands of fan-based maps, modifications and utilities available for free on the Net.

Playing FPS games online has also become something of a sport for many people. Players have been getting together and forming clans ever since Quake first appeared. The more organised clans hold matches on a regular basis, and the best teams usually participate in their local online games league.

Real time strategy (RTS)

Dune 2 started it all in the early 1990s, and RTS games got even better when 1994's Warcraft allowed players to battle it out over a LAN. However, it was in the sequel, Warcraft II, that the online element took off, thanks to the release of a little program called Kali, which allows you to play most LAN-compatible games across the Internet.

Gameplay is simple: both sides harvest resources, construct buildings and units, and then throw everything they've got at each other. More recently, games such as Black & White (which brings together multiple game types) have introduced different elements, and the RTS genre is becoming more diverse and varied with every new game released.

The online RTS scene is not as big as those of games like Ultima Online or Unreal Tournament, but it is still quite active. Heaps of fan-made maps for games such as StarCraft are available, many of them officially sanctioned by the game's developers.

Role-playing games (RPGs)

The original online RPGs were called MUDs (Multi-User Dungeons), and consisted of a text-based interface similar to the adventure games of the early 1980s. They've come a long way since then, evolving into the most popular form of online game. There are usually at least 150,000 people playing online RPGs at any given time. The overall number of players is estimated at well over 1 million.

Signing up usually involves a fee of about \$US10 per month, and even though that's quite a reasonable price, it's not for

everyone. To facilitate the large number of gamers, these games use localised servers, which also help players get the best bandwidth for their location.

Web sites

The heart of multiplayer gaming communities (apart from the games) is in their Web sites. Most multiplayer games undergo constant revisions and upgrades, so it's vital to be online to get them. There's also a wealth of extra modifications, levels and other associated stuff available on fan sites.

In the early days of online gaming, these sites tended to be run by individual fans with a lot of free time, but more recently, they've joined together to form larger gaming networks. These have resources for all the most popular games. The largest of these are Gamespy's network of Planet sites (such as www.planetquake.com, www.rpgplanet.com and www.strategyplanet.com), as well as Media and Games Online Network's range of sites (such as www.diablohaven.com and www.unrealcenter.com). There are numerous other sites that come in handy, including the cornerstone site www.bluesnews.com. Blue and his team have been providing the community with the latest up-to-the-minute gaming news for many years.

Daniel Gardiner

General Web sites

www.gamespy.com
www.gamesmack.org
www.bluesnews.com
www.mgon.com
www.rpgplanet.com
www.ozforces.com
www.3Dactionplanet.com



Demos of some of the games discussed here can be found on this month's cover CDs.

Win Black & White! For your chance to win one of 3 copies of this stunning game, visit www.apcmag.com/comps.

First person shooters

Half-Life and Counter-Strike

Half-Life earned high praise for its excellent single-player experience. The visuals are stunning and unique, enhancing a graphics engine licensed from id Software, as well as adding a skeletal animation system. However, the online modifications are what really catapulted this game into prominence. Counter-Strike, an add-on for Half-Life, instantly became the hottest FPS sensation since Quake.

It is a realistic tactical-ops game where terrorists are pitted against antiterrorists.

The central goal of each match varies — from escorting a VIP to rescuing hostages. Players win money, and this can be used to purchase new weapons and equipment.

Counter-Strike was born of online enthusiasm and can only be played online, or at least through a LAN. Dialup players shouldn't be too concerned about lag, as the network code is quite efficient. However, it often requires patches and updates.

Sierra has released other Half-Life add-ons. Team Fortress Classic gives the members of each team a specific role (medic, spy, demolition, and so on). There is also Oppos-

ing Forces, which opens up new areas in the Black Mesa Research Facility and provides new weapons and multiplayer options.

Kevin Cheung

Official Web sites

www.sierrastudios.com/games/half-life
www.sierrastudios.com/games/counterstrike

Community Web sites

www.counter-strike.net
www.planethalflife.com
www.ozhalf.com
www.ozcstrike.com

Contact Jack of All Games

Phone (02) 9482 7920

Price Half-Life, \$49.95

Counter-Strike, \$49.95

Half-Life Platinum Edition, \$89.95

Requires Half-Life: Pentium 133, Windows 95, 24M RAM

Counter-Strike: Pentium 233, Windows 95, 32M RAM

Classification MA(15+)



Quake III Arena

The world no longer begins and ends with Quake, but it remains one of the enduring aspects of the FPS scene. Quake III Arena originally focused on deathmatches, which was a limitation when Unreal Tournament came out with team modes. The game found form in the following months through online modifications that opened the door to team deathmatches and 'capture the flag' games. They included Team

Fortress, Jailbreak and Corkscrew, all of which are supported by hundreds of fan-created maps and skins.

Earlier this year, id Software released its Team Arena expansion pack, which was nothing more than a handful of the basic online modifications. Quake III Arena's brand of straight-up, over-the-top deathmatching isn't as popular as current tactical-ops games. Strategies such as aiming at someone's feet or rocket-jumping to high platforms are considered a tad

similar to Bugs Bunny physics. It's great for beginners and it's a wild ride once mastered, but its lack of reality means that there's always room for an alternative. This has led to the creation of modifications like Action Quake, which was a precursor to Counter-Strike. The game is still a good benchmark for assessing the graphical performance of a PC.

Kevin Cheung



Official Web site

www.quake3arena.com

Community Web sites

www.planetquake.com
www.ozquaker.com
www.ozquake.com

Contact Activision

Phone (02) 9869 0955

Price Quake III Arena, \$49.95

Quake III Team Arena, \$29.95

Requires Pentium II 266, Windows 95, Windows NT, 64M RAM

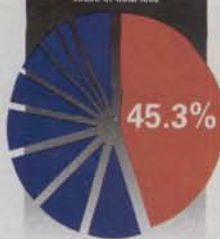
Classification MA(15+)



Because power problems are the biggest cause of hardware and data loss, protect your computer equipment with APC

According to a study by IBM, your PC system is subject to an average of 128 power disturbances per month. Power problems range from the subtle — keyboard lock-ups and frozen monitors — to the serious — hardware damage and complete data loss due to surges and blackouts.

Power problems are the largest cause of data loss



Source: Contingency Planning

Protecting your home PC or small business' valuable data against power problems is simple with the award winning APC Back-UPS, the reliable and affordable power protection solution designed especially for your PC. Remember, when it comes to power problems, it's not "if," it's "when."

APC Back-UPS award-winning features include:

- **3 outlets** provide instantaneous battery back-up and surge suppression for your PC, monitor and an additional peripheral to work through power outages and sudden voltage dips without losing your files. During extended power outages, Back-UPS gives you enough time to save your work and shut down your computer properly
- **1 Surge protected outlet** protects your laser printer from damage due to surges and spikes
- **Lightning and surge suppression** to protect your computer and its peripheral equipment from catastrophic damage
- **Noise filtration** Back-UPS protects against high frequency electrical noise that can damage files and create software errors
- **Quick battery recharge** enhanced charging technology allows Back-UPS batteries to recover from power outages as fast as possible, and ensures they are ready for the next power event

Back-UPS
From \$222*



Recommended by network and electronic vendors worldwide

APC power protection solutions are recommended by network and electronic vendors worldwide. Microsoft, NEC, IBM, Novell, HP and other vendors stress the importance of protecting workstations.

APC has won more awards for reliability than all other vendors combined

For a very small investment, you receive the best value in power protection, securing your expensive PC, peripherals and data, whilst providing you with complete peace of mind.

All APC products have a 2 year warranty, backed by free comprehensive Tech Support. Contact APC today and find out how the company that protects over 8 million satisfied customers worldwide can safeguard your system.

Visit us at www.apcc.com for more information and our Dealer Locator to find your nearest APC reseller.

WIN a Back-UPS 300!

To be in the draw to win a Back-UPS 300, simply fill in the form below, or register on-line at promo.apcc.com.

APC
Legendary Reliability™

Name: _____
Job Title: _____
Company: _____
Address: _____
City/Town: _____
Postal Code: _____
Phone: _____
Fax: _____

E-mail: _____
How many PCs do you want to protect? _____
How many servers do you want to protect? _____
Your organisation is:
☐ Small/Medium Business (less than 200 employees)
☐ Corporation (more than 200 employees)
☐ Computer Reseller/VAR

FREE Back-UPS product information and enter me in the draw to win

☐ **YES!** Please send me FREE APC Back UPS product information and enter me in the draw to win a Back-UPS 300.

☐ **NO** I'm not interested in purchasing APC Back UPS. Please add me to your mailing list.

WIN



Register on-line at <http://promo.apcc.com> and enter the code 48912K
or fax now on (02) 9955 2844 or call 1800 262 178

APC Australia: Level 27 Northpoint, 100 Miller Street, North Sydney, 2060, NSW

©2000 American Power Conversion. All Trademarks are the property of their owners. BK3DOEFAU

* Recommended Retail Price including GST

www.apcc.com

Tribes 2

This is the ultimate in team-based FPS. Tribes 2 differs significantly from the rest of its brethren due to its huge outdoor settings, its use of vehicles and the three simple yet effective armour types.

The environments in Tribes 2 are much larger, and as levels are mostly outdoors, there are some huge, very destructive vehicles to pilot. Players can also change to any of the three armour types (Scout, Assault and Juggernaut) while playing. This means that you're not restricted to playing in just one way during a match.



Players also interact with the scenery a lot more; each team's base usually has gun turrets, sensors and strategic systems. Enemy teams receive a tactical advantage if they can destroy them.

As with the teamplay elements in Unreal Tournament and Quake III Arena, your objectives vary, depending on the type of game. Rabbit has one player holding the flag while everyone else tries to annihilate them and steal the flag for themselves; the longer you can hold the flag, the

more points you get. Bounty has each player hunting one other player, and once you have eliminated your target, you are assigned a new one.

Tribes 2 focuses on strategy to a much greater extent than other FPSes, which makes it vital to work with your comrades to achieve victory. For more information, see our review on page 189.

Daniel Gardiner

Official Web site

www.sierrastudios.com/games/tribes2

Community Web sites

www.planettribes.com

www.tribalwar.com

www.tribes-universe.com

www.tribescenter.com

www.oztribes.com

Contact Jack of All Games

Phone (02) 9482 7920

Price \$87.95

Requires Dependent on your 3D card, check official Web site for full details

Classification MA(15+)

Unreal Tournament

This is the other major 3D multiplayer FPS, and while it does have deathmatches, the focus is squarely on team-based matches. Now, we're not going to argue about whether Unreal Tournament or Quake III Arena is better; we've had equal amounts of fun playing both titles.

Unreal's different play modes range from a standard 'capture the flag' game to the excellent WWII-based Assault.



Subsequent add-on packs from the game's developer Epic have added 70 new maps and several new gameplay types (such as the terrorist/antiterrorist face-off of Tactical Ops) to the mix. This makes Unreal one of the largest, most expansive 3D FPSes available.

Unreal also has some unusual 'mutators' that modify the way specific elements of the game work. For example, the Akimbo mutator allows you to use two of the same weapon simultaneously, while the Assassins mutator gives every player a specific target that they must eliminate. As with Quake III Arena, there is also a truckload of fan-created modifications and levels, and Unreal's fan community is huge.

It's incredibly easy to set up and start playing the game, thanks to its very comprehensive built-in server browser — one of the best yet seen in a multiplayer FPS.

Daniel Gardiner



Official Web site

www.unrealtournament.com

Community Web sites

www.planetunreal.com

www.unrealfiles.com

www.ozunreal.com

Contact OziSoft

Phone (02) 8303 6800

Price Unreal Tournament, \$49.95

Unreal Tournament Game of the Year Edition, \$89.95

Requires Pentium II 350, Windows 95, 64M RAM

Classification MA(15+)

LIGHTS, ACTION, DIGITAL CAMERA!

SNAP INTO ACTION

with The
Digital Camera
Pocketbook

The all-new guide designed to introduce beginners and experienced camera users to the world of digital photography

- ▶ Discover how a digital camera works ◀
- ▶ Learn about the benefits of digital photography ◀
- ▶ Turn your PC into a digital darkroom ◀
- ▶ Manipulate images on your PC ◀
- ▶ Discover the different ways to transfer and archive your photos ◀

The cover CD features the latest software for digital cameras, including:

- ▶ Camera Selector – designed to make your choice easier when buying a camera ◀
- ▶ Complete working version of Ulead Photo Explorer 6.0 ◀
- ▶ Complete working version of Trellian Button Factory ◀



On sale now for \$14.95 (inc GST)

Order online at www.pocketbooks.net.au

[pb]
pocketbooks

ACP Tech

Real time strategy games

Age of Empires II: Age of Kings

Developed by Ensemble Studios, Age of Empires II: Age of Kings expands on its predecessor's successful mix of history, civilisation-building and real time strategy. Age of Kings moves the time frame

from the fall of Rome to the Middle Ages. This version has been out for over a year and a half now, but it was given a huge boost by the addition of its expansion pack, The Conquerors.

The multiplayer option is similar to that of most other RTS games: you collect resources, build up your civilisation, and then send out troops to annihilate your opponents. Some interesting elements are added to the usual fare, such as the use of heavy fortifications (thick walls and gates around your towns). This makes siege engines a vital part of waging a successful campaign. You can also record your games to review later, which is a particularly nifty feature.

Daniel Gardiner



Official Web sites

www.microsoft.com/games/age2
zone.msn.com

Community Web sites

www.planetaoe.com
www.aocenter.com
www.aoe2.com

Contact Microsoft

Phone 13 20 58

Price Age of Empires II: Age of Kings, \$98.95
 Age of Empires II: The Conquerors
 Expansion, \$59.95

Requires Pentium 166, Windows 95,
 32M RAM

Classification G(8+)



Black & White

This latest God game from Peter Molyneux is so big and complex you could spend months just playing around with the game's incredible single-player component. You take the role of a god and battle other gods for followers and influence. You also have a giant totem animal, which you must raise and train; it's effectively a huge, intricate Tamagotchi.

The game really gets interesting in multiplayer mode. It's one thing to play against a computer-controlled rival, but quite

another thing entirely to face the challenge posed by another human.

The game objectives are relatively simple. You and your rivals all start out with a single village of followers and the ability to cast some basic spells. The objective is to expand your territory and power by converting other villages so that they worship you. This can be done in a number of ways, both good and evil; tossing villagers through the air and throwing lightning at houses seems to be an effective way to instil fear

into them. Combat is rather unconventional; most combat is accomplished through your creature and your array of spells.

Level editors are slowly being released onto the Internet, so expect many more maps in the future. Black & White is complex, to say the least, but once you learn the basics, it's a blast to play. For your chance to win one of three copies of Black & White, visit www.apcmag.com/comps.

Daniel Gardiner



Official Web site

www.bwgame.com

Community Web sites

www.bwcenter.com
www.planetblackandwhite.com

Contact Electronic Arts

Phone (02) 9955 7744

Price \$89.95

Requires Pentium II 350, Windows 95,
 64M RAM

Classification M(15+)



PRODUCT DESCRIPTION

PRODUCT DESCRIPTION	Inc-GST
Adaptec Easy CD Creator 5.0 Platinum	115
ACT! 2000 5.0 Full/Upgrade	235/138
Adobe Acrobat 5.0	585
Adobe Illustrator 9.0	969
Adobe Pagemaker 6.5 PLUS	1,275
Adobe Photoshop 6.0 (Includes ImageReady 3.0)	1,545
Adobe Premiere 6.0	1,385
Adobe Publishing Collection 9.0	2,445
AutoCAD LT 2000i & FREE MS Optical IntelliMouse	1,235
AutoSketch 7.0 (Win 95/98/NT)	189
Backup Exec Desktop Pro (Win/NT/2K/Me)	199
CD Maker Pro 2000 (Burn CDs - Data, Audio, MP3s)	85
Corel Draw 10 Upgrade	615
Corel Gallery 65,000 (Clipart)	40
Encyclopaedia Britannica 2001 Deluxe	179
Eudora Pro 5.0	132
Filemaker Pro 5.5	465
iGrafx Flowcharter 2000 Professional	638
LapLink GOLD (Remote connectivity)	295
Macromedia Dreamweaver 4.0 & Fireworks 4.0	1,080
Macromedia Dreamweaver 4.0 Full/Upgrade	645/359
Macromedia UltraDev 4.0	1,249
Macromedia Fireworks 4.0 Full/Upgrade	649/339
Macromedia Web Design (After Cashback - till 9/7)	1,498
MAUS MasterPlan Pro	169
MAUS CRM Sales & Marketing	249
MAUS Stockmarket Plus & Investment video	169
Micrografx Flowcharter 7.0	275
MS Office XP 2002 PRO C/Upgrade	649
MS Office XP 2002 PRO EndUser Subscription License	325
MS Office XP 2002 Standard C/Upgrade	489
MS Project 2000 Full/Upgrade	915/399
MS Windows Me Upgrade (Win 98 Users Only)	92
MYOB Accounting 11 (Win/Mac)	349
MYOB FirstAccounts (Win/Mac)	189
MYOB Premier Accounting 5 - 3 Users	949
NewSoft Presto OCR 4.0	89
Norton AntiVirus 2001 Single/5 User	85/249
Norton Ghost 2001	129
Norton pcAnywhere 10 Host & Remote	249
Norton SystemWorks 2001 & Personal Firewall 2001	149

FREE
national delivery
for all orders over
\$200*

PowerQuest Drive Image 4.0	120
PowerQuest PartitionMagic 6.0 Full/Upgrade	120/59
QuarkXPress 4.x	3,395
QuickBooks 8 Standard	240
QuickBooks 8 PRO	425
QuickBooks 8 PRO & Payroll	665
QuickCAD 7.0 (Win 95/98/NT)	89
Quicken CashBook	179
Quicken Personal Plus 8.0	120
Sharetrend StockMarket 2000	135
Trellian FTP (File transfer)	60
Trellian SubmitWolf Pro (Register your website)	145
Typequick 8.02 for Windows	89
Vet Premium	89
WinZip 8.0 - 1 User	69

ACADEMIC VERSIONS

(Student/Teacher ID Required)

ACADEMIC VERSIONS	Inc-GST
ED 3D Studio Max & Character Studio (Students)	265
ED AutoCAD 2000i	265
ED Adobe Acrobat 5.0	122
ED Adobe Illustrator 9.0	179
ED Adobe Photoshop 6.0	569
ED Filemaker Pro 5.5	315
ED Macromedia Dreamweaver 4.0	249
ED Macromedia UltraDev 4.0	369
ED Macromedia Web Design (After Cashback - till 9/7)	545
ED Norton AntiVirus 2001	55
ED Norton SystemWorks 2001 Professional	149

HARDWARE/PERIPHERALS

HARDWARE/PERIPHERALS	Inc-GST
Agfa CL18 Digital Camera	249
Belkin USB 4-Port Pocket Hub	99
Compaq iPAQ H3630 Pocket PC	1,079
Diamond View 15"/17" TFT LCD Monitor	1,699/3,299
D-Link PCMCIA/PCI Network Card	154/55
HP Deskjet 640C + Scanjet 4200C	385
HP Laserjet 1200	765
HP Scanjet 3300C/4300C	149/199
iMAG Bondi Blue Speakers - The Original	129
Iomega ZipCD 4x4x6 Burner	522
Lexmark Z11 Colour Jetprinter + Cable (Lid Stock)	95
Netcomm Roadster II 56 Ultra/Wave SP 56 Modem	189/195
Netgear 5-Port/8-Port Fast Ethernet Switch	165/299
Palm Vx/m105	735/445
Pinnacle Studio DV/DC10 Plus	299/549
Pinnacle Studio PCTV/VCD	220/199
Polaroid 640 Digital Camera with Software (Colour LCD Display)	199
Quantum Snap Server 15GB/30GB	1,199/1,749
Que! External CD-RW 12x10x32 FireWire Burner	799
Sony Cyber-Shot DSCP1 Digital Camera	1,699
Toshiba 1730x/CDT With Carry Bag (6500hz/128M RAM/10GB HDD)	2,699
Umax Astra 1600U/2100S Scanner	159/239
Xircom RealPort2 CardBus 56K Modem with Integrated Connectors	335
Xircom Rex 5 PC-Card & Docking Station	229

FULL RANGE OF TONERS & CARTRIDGES AVAILABLE

Adobe Premiere 6.0

Creating video for the Web, DVD, CD-ROM, and videotape. Robust DV support, direct export to all the leading Web streaming-video formats, and enhanced professional tools.

Academic version \$599.

\$41.55 SMARTBUY REBATE.

\$1,385
DELIVERED



MS Office XP Pro Upg Special Ed.

Includes 7 of the best:

Word 2002, Excel 2002 (spreadsheet), Outlook 2002, PowerPoint 2002, Access 2002, FrontPage 2002, SharePoint Team Services (Team Web site solution), Publisher 2002.

Available June 1, 2001.

\$915
DELIVERED



Macromedia Flash 5 & Freehand 10 Studio

The perfect solution for professional web designers. From concept to completion, Freehand and Flash provide the perfect combination for high-impact web development. Upg \$499.

\$1,069
DELIVERED



Pinnacle Studio DV

Create Streaming Video CDs and streaming videos. Capture, edit and output in full DV quality with the ease of the Studio software's 3 easy steps. Capture the entire DV tape into their hard disk drive in preview quality in only 150MB!

\$8.97 SMARTBUY REBATE.

\$299
DELIVERED



Toshiba Satellite Pro 4330x/CDT

Includes Celeron 650MHz, 128KB cache, 64MB RAM, 14.1" TFT screen, 10GB EIDE HDD, Internal 24x CD-ROM, Integrated 56K modem, Windows 98, 1 year warranty, PLUS BONUS CARRY BAG. For extra 64MB RAM add \$150.

RentSmart \$31.24 per week

\$3,185
DELIVERED



Predator CD-RW USB 650MB

Simple to use, stylish portable CD drive. Includes loads of new software including Adaptec Easy CD Creator 4.0 for music. Drive Speed: 4x4x6 USB 1 and 32x8x4 USB 2.

\$17.85 SMARTBUY REBATE.

RentSmart \$6.52 per week

\$595
DELIVERED



*"Receive a
3% rebate
with our
SmartBuy
Club"*



CITY SOFTWARE

1300 658 600

Command & Conquer: Red Alert 2

Russians invade the US and bomb it to kingdom come — that's the premise of Red Alert 2. As the sequel to one of the most popular real time strategy franchises, this title is surprisingly short on major improvements. The developer, Westwood, chose to stick with its existing game engine, throwing in a few new units and providing extra in-game battle options. However, the result is not disappointing, as garrisoning buildings

opened up some dynamic new strategies.

The single-player mode is limited to the US against Russia, but the multiplayer mode comes with loads of extra spice. Players can align with France, England, Germany, Iraq, Libya or North Korea. Each has a unique battle unit, such as snipers, tank destroyers or the Grand Cannon. Suicide units (like a mobile A-bomb) and planes with extra manoeuvrability have added real variety to the combat.

Map packs are regularly released through Westwood and fan sites. Most of them can be played on just about any server, but LANs work best. There is also a small modification community that occasionally adds new units and upgrades the AI of computer units to make them smarter and meaner. Watch out for Command & Conquer's evolution into first person shooters in Renegade.

Kevin Cheung



Official Web site

westwood.ea.com/games/ccuniverse/redalert2

Community Web sites

www.ra2source.com

www.cncredialert2.com

Contact Electronic Arts

Phone (02) 9955 7744

Price Command & Conquer: Red Alert 2, \$89.95

Red Alert 2: Collector's Edition, \$109.95

Requires Pentium II 266, Windows 95, 64M RAM

Classification MA(15+)

StarCraft

An oldie but still a goodie, StarCraft is basically Warcraft in space. These days, it rates as value-for-money multiplayer gaming, accessible to anyone with the most basic of PCs. It also has some of the best cinematic full motion videos ever. The mechanics of the three alien groups are rather simple: the crustacean-like Zerg are fast to produce, but weak in battle; the Protoss are slow but powerful; and

the Terrans are somewhere in the middle of the two.

The Brood War expansion pack was released shortly after the original, and tied up the loose ends it left. The Terran Emperor Mengst must now deal with the woman he betrayed: Kerrigan, Queen of Blades. Three new units were made available to the Protoss, and the Terrans and Zerg received two each.

The Zerg remain a clear favourite among fans, but the Brood War expansion pack has tried to balance this favouritism by providing medic units and Protoss warriors with greater powers.

The game has online connectivity, but there isn't much of a community left at the Battle.net server, due to the game's age. However, the game is supported by most good ISPs, and is still a favourite at private LAN parties.

Kevin Cheung



Official Web site

www.blizzard.com/starcraft

Community Web sites

www.starcraft.org

www.scnation.com

www.sclgacy.com

Contact Jack of All Games

Phone (02) 9482 7920

Price StarCraft, \$49.95

StarCraft Brood War, \$29.95

StarCraft Battle Chest, \$79.95

Requires Pentium 90, Windows NT, 16M RAM

Classification M(15+)

Business GET THE POWER



1GHz Power On The Move

All-in-one 1GHz Notebook **only \$2999**

The PowerNote 340 is designed to offer you a real desktop power solution that addresses the needs of the modern business world. Powered by the fastest Pentium® III processors up to 1GHz, featuring the integrated 10/100 Mps LAN card and 56K Modem which can conveniently be connected to your office network for quick and easy network access.

PowerNote 340CTL-700

- Intel® Celeron™ Processor 700MHz
- 14.1" Active TFT LCD 1024 x 768
- 64MB RAM Expandable to 256MB
- Upgrade to 128MB RAM Add \$99
- 10 GB Ultra DMA Hard Disk
- 24X CD-ROM Drive
- Integrated 10/100 LAN & 56K Modem
- Microsoft® Windows® Me
- 1 Year Limited Warranty*

\$2599 \$25.49/w*

PowerNote 340CTL-1000

- Intel® Pentium® III Processor 1GHz
- 14.1" Active TFT LCD 1024 x 768
- 128MB RAM Expandable to 256MB
- 10GB Ultra DMA Hard Disk
- 24X CD-ROM Drive
- Upgrade to 8X DVD Add \$299
- Integrated 10/100 LAN & 56K Modem
- Microsoft® Windows® Me
- 1 Year Limited Warranty*

\$2999 \$29.41/w*

PowerNote 350DT-700

- Intel® Pentium® III Processor 700MHz
- 15.1" Active TFT LCD 1024 x 768
- 128MB RAM Expandable to 256MB
- FREE Upgrade to 256Mb RAM Valid till 15/07/2001
- 10 GB Ultra DMA Hard Disk
- Upgrade to 20Gb Hard Disk Add \$159
- 8X DVD-ROM Drive
- Integrated 10/100 LAN & Modem
- Microsoft® Windows® Me
- 1 Year Limited Warranty*

\$3899 \$36.44/w*



1GHz Desktop **only \$1799**

Fully configured featuring 256MB RAM 100M LAN & 56K Modem

IntelliPro 1000GS

- Intel® Pentium® III Processor 1GHz
- 256MB SDRAM, 20GB Hard Disk
- 17" Monitor (0.27dp, 16"v.i.s.)
- 32Mb SMA 4xAGP Graphics
- 3D Audio, Speakers, 52X CD-ROM
- 104-Key Keyboard & Mouse
- 10/100 Network Card & 56K Modem
- Microsoft® Windows® Me
- Corel® WordPerfect® Suite 8 & PC-Cillin Anti-virus
- 3-Year Limited Warranty*

\$1799 \$19.72/w*

IntelliPro 2000BTS

- AMD® Athlon® 1.2GHz (FSB 266MHz)
- 256MB SDRAM, 30GB Hard Disk
- 17" Philips 107T Flat Monitor
- 32MB GeForce™ MX200 AGP 4X
- 3D Audio & Flat Panel Speakers
- 12X DVD-ROM Drive
- 104-Key Keyboard & Logitech Mouse
- 56K V.90 Data/Fax Modem
- Microsoft® Windows® Me
- 3-Year Limited Warranty*

\$2299 \$22.55/w*

IntelliPro 1400GX

- Intel® Pentium 4® 1.4GHz
- 128MB RDRAM, 40GB Hard Disk
- 19" Panasonic SL95 Monitor (0.25dp)
- 64MB GeForce™ MX200 AGP 4X
- Creative™ Audio & Flat Panel Speakers
- Pioneer® 16X DVD-ROM Drive
- 104-Key Keyboard & Logitech Mouse
- 56K V.90 Data/Fax Modem
- Microsoft® Windows® Me
- 3-Year Limited Warranty*

\$2899 \$28.43/w*

DIGITALSTAR

1 8 0 0 8 0 0 2 3 8 www.digitalstar.com.au

North Sydney **02-99292868**
Shop2, 110 Walker St, Fax: 02-99292865

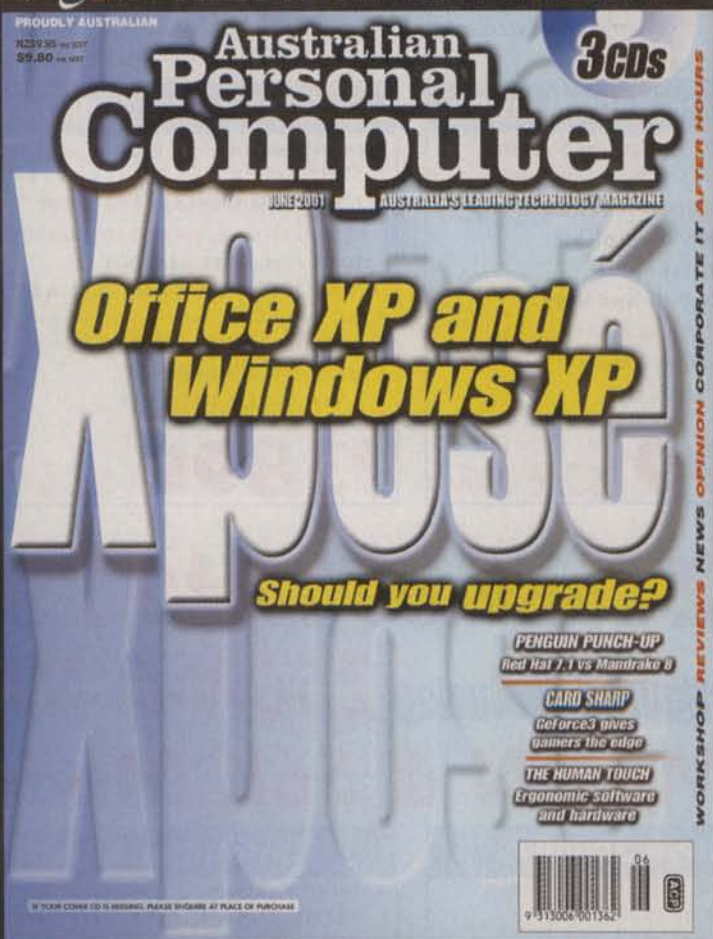
Auburn **02-87486848**
15 Newton St South Fax: 02-97379326

Notebook Reseller Wanted
Ph: **02-87486803**

* DigitalStar's terms and conditions of sale are applied and are available on request. Prices, specifications and availability subject to change without notice. The Intel Inside logo and Pentium are registered trademarks of Intel Corporation. All brands and product names are trademarks of their respective companies. Product pictures for illustrative purpose only. All Digital Star Desktop PC comes with a 3-Year Limited Return to Base Warranty. First two-year provide parts and labour warranty. Year 3 provide labour warranty only.

Subscribe

apcmag.com BONUS CD: NEW RED HAT LINUX 7.1



It's a new financial year and to celebrate, you can benefit from our first-class deal of 12 issues of Australian Personal Computer for only **\$67*** (inc GST), just by taking out a new subscription or renewing your existing one.

**Direct debit
option now
available**

**3 WAYS TO
SUBSCRIBE
AND SAVE**

Call 13 61 16

Visit magshop.com.au

Mail the attached subscription card

Complete card
and mail to:

APC
Reply Paid 3357
Sydney NSW 2001
(No postage stamp required if
posted in Australia)

Fax your order:
(02) 9267 4363
(24 hours a day)

For immediate service,
use the Customer
Service Centre:

13 61 16
Monday to
Friday
8am to 8pm EST,
Saturday
8am to 6pm EST

Published by ACP Tech, a division of ACP
Publishing Pty Limited, ACN 053 273 546

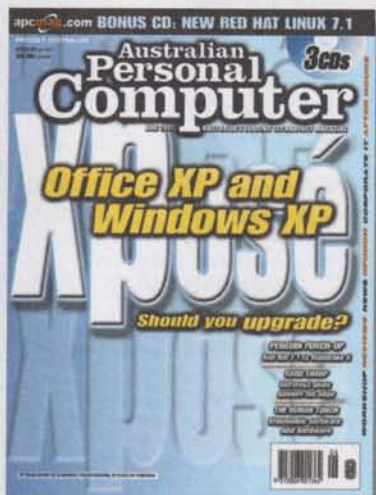
ACP Tech

apcmag.com

**Subscribe and save
\$50 off our 12-month
newsstand price**

Delivery Address:
GPO Box 3357
SYDNEY NSW 2001

No stamp required
if posted in Australia



**Australian Personal Computer
Reply Paid 3357
SYDNEY NSW 2001**

**Direct debit
option now
available**

Australian Personal Computer

AUSTRALIAN'S LEADING TECHNOLOGY MAGAZINE

Payment details:

I have enclosed a cheque/money order for ☐ \$67 Australia (12 issues) made payable to ACP Direct
OR ☐ \$AU92 New Zealand (12 issues) made payable to ACP Direct

☐ Please debit my credit card for \$33.50 now and \$33.50 for each six-month period from then on.

To ensure I receive uninterrupted delivery of my APC magazine, please renew my subscription each period upon expiration at the same fee unless otherwise agreed. Unless I cancel my subscription, I understand my subscription will continue and the account nominated above will be automatically billed (Australian residents only).

☐ Bankcard ☐ MasterCard ☐ Visa ☐ Diners Club ☐ American Express

Card number:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Expiry Date /

Signature

Mr/Mrs/Miss/Ms Initials Surname

Street Number Street Name

City/Town/Suburb


Postcode Daytime Phone Number

Offer expires 17/07/01

Source Code: APCB0701

● APC (12 issues) \$67
Australia (inc. GST)

● APC (12 issues) \$AU92
New Zealand (inc. GST)

 For free mailing, put in an envelope and mail to:
APC, Reply Paid 3357,
Sydney NSW 2001

(No postage stamp required if posted in Australia.)

For more immediate service,
visit www.magshop.com.au
or ring the Customer Service Centre
(13 61 16) Monday to Friday 8am to 8pm
EST, Saturday 8am to 6pm EST.

Published by ACP Tech, a division of
ACP Publishing Pty Limited
A.C.N. 053 273 546

ACP Tech

and Save

APC

YOUR FIRST CHOICE

\$50

**Australia's longest-running
and top-selling computer magazine**

- Dedicated testing facilities at APC Labs
- First reviews of the hottest new products
- Detailed features on the impact of technologies
- Hands-on advice in Workshop
- Leisure and pleasure in After Hours
- At least two cover CDs
- Bonus reader offers
- A complete archive of all articles at our apcmag.com Web site

**OFF OUR 12-MONTH COVER PRICE
NOW ONLY \$67**

NZ SUBSCRIBERS

\$AU92

including postage
and handling

SAVE 20%

TERMS AND CONDITIONS

■ This offer is open to all residents of Australia (at the rate of \$67) and NZ (at the rate of \$AU92) who subscribe to *Australian Personal Computer* between 20/06/01 and 17/07/01. Price is subject to the correct use of a valid credit card or, if payment is made by cheque, the cheque must be cleared for payment. Subscriptions are to be sent to APC,

Reply Paid 3357, Sydney 2001; or phone 13 61 16 (freecall Monday to Friday 8am to 8pm EST, Saturday 8am to 6pm EST) or online at www.magshop.com.au.

■ The Promoter accepts no responsibility for late, lost or misdirected subscriptions.

■ All correspondence will be entered into a

database and the Promoter may use the entrants' names and addresses for future promotional, marketing and publicity purposes unless otherwise advised by the entrant.

■ The Promoter is ACP Publishing Pty Ltd of 54 - 58 Park Street, Sydney, NSW 2000, ACN 053 273 546.

Role-playing games

Asheron's Call

Microsoft's foray into the role-playing market may not be as popular as its counterparts, but it has managed to develop a large community of players nonetheless.

Character development in Asheron's Call is handled uniquely. You start off with a profession, but there are no clearly delineated character class boundaries, as there are in other online RPGs.



This means, for example, that you can have warriors with the ability to cast spells. Creatures in the world of Dereth also tend not to follow the traditional model. This is refreshing and makes exploration and discovery that much more exciting, even for hardened RPG fans. New players will gain a great deal from swearing allegiance to a more experienced player, and the game fosters this sort of alliance.

Played from a 3D first person perspective, the main failing of Asheron's Call is its blocky 3D graphics. Characters are not quite as detailed as they are in EverQuest, but the game manages to hold its own when it comes to creating stunning landscapes to explore.

A sequel to the original was announced in February, but no details about the game (such as the release date) are yet available.

Daniel Gardiner



Official Web sites

www.asheronscall.com
zone.msn.com

Community Web sites

www.asheronslore.com
acvault.ign.com
www.acoutpost.com

Contact Microsoft

Phone 13 79 58

Price \$54.95

Requires Pentium 200, Windows 95, Windows 2000, 64M RAM

Classification M(15+)

Diablo II

Diablo II is mainstream role-playing gone mad. Rules are simplified, spells are hotkeyed, and all you have to do in this dungeon romp is click your mouse cursor on whatever you want to look at or kill. It's been accused of being a mindless clickfest and a single-player version of Warcraft, but its online multiplayer functions gave birth to modern MMORPGs such as Redmoon.

The five new character classes — Paladin, Sorceress, Necromancer, Amazon

and Barbarian — are markedly different from each other, thanks to unique ability trees. The Paladin, for instance, can share his battle aura, and the Necromancer can raise armies of the dead. Multiplayer games played through Blizzard's highly accessible Battle.net server pay high rewards for team work.

Online play thrives through the trade of unique items, weapons, trinkets and armour. This has meant that some hackers have created or duplicated their own items, but worse than this, it has also created a culture of player killers and town killers who prey on unsuspecting newbies.

Blizzard intends to release its Lord Of Destruction expansion pack in mid-July. It will contain an extra chapter that follows directly after Act IV of Diablo II, as well as two brand new character classes: Assassin and Druid. The game will also come with an option to play at 800 by 600 resolution. It's about time!

Kevin Cheung



Official Web site

www.blizzard.com/diablo2

Community Web sites

www.diabloii.net
diabloii.ugo.com

Contact Jack of All Games

Phone (02) 9482 7920

Price \$69.95

Requires Pentium 233, Windows 95, Windows NT, 64M RAM

Classification MA(15+)

Memorise this



or call 12 451.

To find what you're looking for, simply call Yellow Pages® *Connect* and we'll connect you. It's the Yellow Pages® directory on the phone.

Yellow Pages® 
Connect

A fee of \$1.21 applies plus call charges. For connection from and to most numbers.

®Registered trade mark of Telstra Corporation Limited. YPT 152

EverQuest

Still the most popular of all the MMORPGs, EverQuest is going strong, despite its ageing graphics engine. Players roam the world of Norrath, which has all the trappings of a good RPG: dungeons, guilds, gods, dragons, gold and even alternative planes of existence.

EverQuest has had as many as 300,000 players signed up, making it the most popular of all the online RPGs



around. Its first person 3D perspective is what originally attracted many players, who have since become hooked on the game's complex and intriguing world. While its gameplay is definitely focused on combat, it's almost vital for players to band together and draw on each other's strengths. The main criticism levelled at EverQuest is that certain in-game tasks become incredibly repetitive.

Originally released in March 1999, two expansion packs have since come out: The

Ruins of Kunark and The Scars of Velious. Each one has added to the already sizeable landmass. A third expansion, entitled The Shadows of Lucin, is currently in development, and features a much-enhanced 3D engine, as well as a new world to explore. It is currently scheduled for a December release.

Daniel Gardiner



Official Web site

everquest.station.sony.com

Community Web sites

www.planeteverquest.com

eqvault.ign.com

www.everlore.com

Contact Ubi Soft

Phone (02) 8302 1800

Price EverQuest: Deluxe Edition, \$89.95

EverQuest: The Ruins of Kunark, \$76.95

EverQuest: The Scars of Velious, \$54.95

Requires Pentium 200, Windows 95, Windows 2000, 64M RAM

Classification M(15+)

Ultima Online

One of the original MMORPGs, Ultima Online is still enjoyed by legions of fanatical players, and has undergone numerous revisions and much finetuning since its original release three years ago.

Based on the popular Ultima series of games, it gives players the chance to live in the sprawling world of Britannia on a day-to-day basis. Unlike some of its counterparts, the world has a functional economy, so players can make a living by becoming a tradesperson or angler to supplement their adventuring lifestyle.



Ultima Online is also quite distinct from other MMORPGs because it uses a third-person, bird's-eye view.

It has numerous 'shards' — servers placed around the world to allow players to get the best ping time for their location. Each shard has a different Britannia, and you can play on more than one shard, and use different characters on each. Up until last year, there was no local shard, so players were forced to put up with large amounts of lag to play. However, last year a server was located in Sydney and it now allows local players to enjoy much more fluid gameplay.

There are currently two versions for sale: Renaissance and Third Dawn. Renaissance is the original Ultima Online in its latest patched, updated and tweaked state. Third Dawn is an entirely new game using a 3D engine, and is played on separate servers.

Daniel Gardiner



Official Web site

www.uo.com

Community Web sites

www.uovault.com

uoss.stratics.com

Contact Electronic Arts

Phone (02) 9955 7744

Price Ultima Online: Renaissance, \$43.95

Ultima Online: Third Dawn, \$43.95

Requires Ultima Online: Renaissance, Pentium 200, Windows 95, 32M RAM

Ultima Online: Third Dawn, Pentium 266, Windows 95, 64M RAM, 8M 3D card (Voodoo2 cards not supported)

Classification MA(15+)

EPSON -

The Perfect Companion

For eye-catching presentations, ultraportability, Friday night Footy, choose EPSON - perfect!

On the Move



*EMP-505
EMP-703
*EMP-715

Ultra Portable
Bright - 1000A+
Well Featured
*PCMCIA Slot



Travel light -
with the EMP-715 or 505 simply copy
your presentation on to the PCMCIA card,
insert into the projector and play!!!! Perfect!

Epson's new range of multimedia projectors reflect Epson's No 1 position in LCD technology development. Ultralight to ultrabright, premium desk top projectors for boardrooms, conference centres & auditoriums to personal projectors for home, classroom or office use - brilliant imagery, sophisticated technology and so simple to use - perfect!

In the Office



EMP-5600
EMP-7600

Very Bright 2200A
Superb Resolution
Excellent Features

At Home



EMP-50
EMP-70

Entry Level
Well Featured
Great Video

Large Venues

EMP-7700
EMP-8100
*EMP-8150



Ultra Bright 3000A+
Excellent Features
*LAN Capability

EPSON is distributed throughout Australia by A Brighter Image Pty Ltd
Phone 1800 808 462 for your nearest local Dealer



Download brochures from www.abimage.com.au



Email enquiries to sales@abimage.com.au

abi

Setting up a network for home gaming

Do you have more than one computer in your home? Want to get more out of them?

There are several options available if you want to set up a home network. Your choice depends on how much money you want to spend, how many computers you have, and where they are located in your home.

For this article, we've chosen to go with the easiest method of setting up a network, using the 10BaseT standard. This is plug and play at its simplest. This guide also assumes that you have Windows 98 or Me, which are required by most PC games these days. (Please note that APC staff cannot give any networking support — if you are having problems, see the troubleshooting section below or contact your hardware or software supplier.)

What you'll need

Before you set anything up, go into the Network folder in the Control Panel and make a note of what's listed there. This will come in handy later on for troubleshooting conflicts.

First, there are two important items you need: a basic PCI PnP 10BaseT network interface card (NIC) for each machine (about \$30 each) and an adequate amount of RJ-45 cabling to connect each PC. It's always a good idea to shop around for cabling — prices vary significantly between retailers, and you can often get it a lot cheaper online.

If you've got more than two PCs, you also need a hub to connect them all. APC recommends a basic five-port 10Mbps hub. These can be found for under \$100 and will allow you to connect up to five PCs together. If you've got more than five, buy a bigger hub. You can also hook most hubs together. For example, linking two five-port hubs takes up one port on each hub, and allows you to connect up to eight computers together.

Hardware setup

Before you start, it's a good idea to read all the warranty information that came with your computer. Make sure that you are not voiding your warranty by opening the computer's casing or adding components.

Step 1: Install network cards

We've included a rough outline of how to install a NIC; you should consult the manual that came with your particular card for any specifics relating to it, or if you are having problems getting it up and running.

First, turn off the computer, unplug it from the wall, then unscrew the casing. The screws are usually found at the back, but if you are unsure, consult the documentation that came with your PC or call the supplier.

Find a free PCI slot (they're white), and unscrew the slot cover at the back of the PC. Remove both it and the screw.

Push the NIC firmly into the slot. It should fit exactly with only a small amount of resistance. Screw the card in, using the screw that was previously used to hold the slot cover.

Now, replace the computer case and plug the power back in, then turn the computer on. Windows should automatically detect the new card. If your NIC came with a drivers disk, insert it when prompted. If Windows boots up without finding any new hardware, try running the Find New Hardware wizard in Control Panel. If it still doesn't find the card, or it doesn't boot at all, try installing it into a different PCI slot.

Step 2: Set up the cabling

If you have two computers, connect them with an RJ-45 crossover cable (as opposed to a standard cable used to connect to a hub). Crossover cables are only useful for networking one pair of computers, and do not function correctly when connected to a hub. It's vital to buy the correct cabling for your network setup.

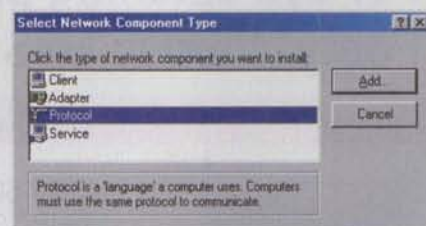
If you have more than two computers, plug each one directly into the hub using a standard RJ-45 cable. When each computer is connected, make sure the hub is turned on.

Software setup

To set up your network in Windows, open the Network folder located in the Control Panel. You should see the following items listed, as in Figure 1.

- Client for Microsoft Networks
- Dial-Up Adapter
- [Your Network Interface Card]
- TCP/IP -> Dial-Up Adapter
- TCP/IP -> [Your Network Interface Card]

There may be other items, especially if you already had a network card installed, or if you have a cable modem. If anything is missing, you need to add them manually by clicking the Add button (Figure 2). TCP/IP



▲ Figure 2

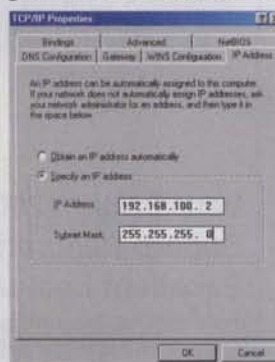
only needs to be added once. You might also wish to add the IPX/SPX-compatible Protocol, which is found under Protocols, as many games support this.

Next, you'll need to assign an IP address to each machine; this allows them to locate each other. In the Network properties folder, click on TCP/IP -> [Your Network Interface Card]. If you have a cable Internet

connection, you'll see two NICs; the second one is used to connect to the Internet through the cable modem, so make sure you've selected the card you've just put in. Click the Properties button, and make sure the IP Address tab is selected. If anything here has already been filled in, then you have probably selected the wrong network card.

Click 'Specify an IP address', as in Figure 3. You must type in a fully qualified IP address. For the sake of simplicity, we'll use 192.168.x.y, where x and y are numbers between two and 255. The first two numbers have been specifically set aside for use on home networks, so they do not interfere with Internet addresses, which use the same protocol. Each computer

should have the same number for x, and a different number for y. For example, the first computer on our network might be assigned to 192.168.100.2. We'd then give the second computer 192.168.100.3, and so on. The y numbers do not necessarily have to follow each other. As already mentioned, they can be anything between two and



▲ Figure 3



▲ Figure 1



CREATIVE INTELLIGENCE

Companion Products for
Ulead VideoStudio 5.0

Companion Products for
Ulead VideoStudio 5.0



Create DVD, VCD,
SVCD and Mini-DVDs.
Integrates directly into
Ulead VideoStudio 5.0.



Affordable, royalty-free
video clips for adding
high-quality footage to
your productions.



Easy & powerful 3D
graphics creation and
animation for your
videos.

Awards for
VideoStudio :



Product of the Year
(Amateur Video Editing
Software) -
Australia Video Camera
Magazine, 2000



Best of the Year Award
(Consumer Video Editing
Product) - PC User,
Australia, 2000

WHACK!

[this is the sound of your hand hitting your head after you find out you could have edited your videos faster, easier, and cheaper if you had used Ulead VideoStudio 5 first]

The best solution for video enthusiasts and camcorder purchasers

Ulead VideoStudio 5.0 DV Combo Pack Complete Video Editing Solution

Includes:

- * Ulead VideoStudio 5.0 Full Version
 - Batch Capture and Automated Scene Detection
 - 100+ Adjustable Effects & 30 Video Filters
 - Transparent video/graphic motion overlays
 - Full DV and MPEG 1 & 2 editing capability
- * High Performance IEEE-1394 (Firewire) Capture Card
- * FREE Bonus Book - 'Making a Video CD'

PLUS a Bonus CD containing:

- Ulead Photo Express 4.0 My Custom Edition
- Ulead COOL 3D 3.0 Special Edition
- Ulead Pick-a-Video Royalty-Free Sample Clips

PLUS a 20% off coupon for the NEW
Ulead Pick-A-Video Royalty-free Video Clips



Special Limited Edition

Purchase between June and August Ulead DVD Plug-in a \$100 value, is yours for free

Using VideoStudio 5.0 and your CD-R/CD-RW burner, you can make an interactive Video CD that can be played on most DVD players*. You get a high-quality, interactive and easy-to-share video output that can be archived for generations.

With Ulead DVD Plug-in you can:

- Use your own CD-R/CD-RW burner (DVD-R support coming soon)
- Make VCD, SVCD or DVD format movies on CD within VideoStudio 5.0
- Distribute high-quality video on CDs (in VCD, SVCD or MiniDVD format)
- Use convenient templates to make scene menus, allowing you to jump to various places in your video
- Play your creation on computer-based and stand-alone DVD players

* Check with your DVD player manufacturer for VCD, SVCD and MiniDVD compatibility.

For this Super Offer please contact
Ulead Systems, Inc.

sales@ulead.com.tw

<http://www.ulead.com/au>

Compatible with MS Windows® 98/98SE/2000/ME/ NT4.0 with Service Pack 6

The LAN alternative

Playing games over a LAN (local area network) is different from online gaming in one important way: a fully switched network means low latency, so there's almost no lag.

A basic LAN can be set up at home using a few Ethernet network cards and several metres of cable (as discussed here). However, finding enough friends to come over, adequate table space for all the PC towers and monitors, and enough power outlets for all the appliances, can pose problems.

A more convenient alternative is to play LAN games at Internet cafes. You are charged by the hour and limited by the cafe's hardware, but at least opening hours are flexible. Unfortunately, numbers are usually limited. The chances of playing teams of 32 in Tribes 2 in these establishments are incredibly slim.

To get the best out of LAN gaming, clubs throughout Australia hold monthly LAN meetings. Some of these meetings host as many as 300 players in one sitting, and the entry fee is usually less than \$30. Some meetings run from 10am to 10pm; others continue for 24 hours or more. The presence of corporate sponsorship ensures reasonable quality in the network, and there are often prizes to be won in competitions.

However, LAN events aren't just about the games. People trade MP3s, modification downloads, skins, maps, and technical tips on their machines. "There's something special about being in a room with nearly 300 people all interested in the same thing," Multiplayer United's Brent 'Bane' Artindale said. "Unlike Net gaming, it really is social. You have the atmosphere of people egging you on, you don't have any of the bad behaviour that you get on the Net, and it's so much more friendly and personal."

To find out about upcoming LAN events, visit the national register at register.ausgamers.com.

Kevin Cheung



255 (we could have made them 45 and 176 and they would still work) so long as the *x* number for each computer is the same. The *y* number assigns them a distinct identity and address on the network; it sets them apart from each other. Remember that the first three numbers (192.168.100 in our example) must be the same for each computer on the network, otherwise they will not be able to see each other. For the Subnet Mask, use 255.255.255.0 for all the computers.

Next, click the Identification tab. Here, you must give each computer a unique name, as in Figure 4. Make sure that the Workgroup name is the same for every computer. The description can be anything you want.

Once you've verified that all these settings are present and correct, click OK, then reboot all the machines.

You should now have a functioning network, ready for all the multiplayer action you can throw at it.

Finetuning

There are certain other useful things you can do now that you've got the network set up.

File sharing

This gives other computers access to files on your hard disk. You can specify the exact level of access that other people have. To activate file sharing, open the Network folder again and click the File and Print Sharing button. Check the box that says 'I want to be able to give others access to my files'. Reboot as necessary.

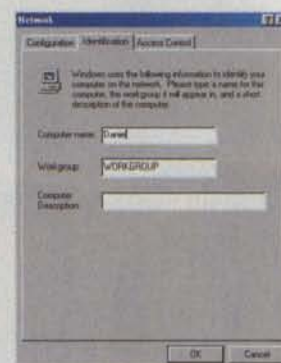
Now, if you have a folder that you would like to share, right-click it and click Properties. Click the Sharing tab. You can now fill in the details and restrict access as you see fit.

Removing the logon prompt

If you aren't using passwords to log on to the computers, you can easily disable the logon prompt that comes up every time Windows starts. First, open the Passwords folder in the Control Panel, then click Change Windows Password. If you are currently using a password, type it in the top field and leave the bottom two blank, as in Figure 5. Click OK, and then OK again. Next, open the Net-



▲ Figure 6



▲ Figure 4

work Properties folder and change the Primary Network Logon to Windows Logon, as in Figure 6. Now reboot, and you should no longer be prompted to log on when Windows starts.

Troubleshooting

The easiest way to check that your network is running is to look in the Network Neighborhood. If you can browse to the other computer(s), your network is running.

You can also use the simple diagnostic tool ping.exe, which is automatically installed with the TCP/IP networking protocol. Go to the DOS prompt by clicking MSDOS Prompt in the Programs, Accessories folder of the Start menu and type ping [the address of one of the other computers]. For example, ping 192.168.100.2 would test whether the computer in our previous example was working. If you get a reply from that address, your network is working.

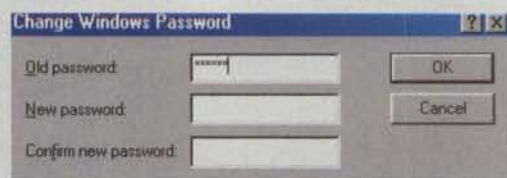
Problems installing the network card

Most problems to do with NIC installation are caused by conflicts with existing PCI devices. Try moving the card to different PCI slots, or switching NICs between computers.

Problems with a specific computer being unable to access the network

Check the cabling. Try switching the RJ-45 cable on the problem computer with the RJ-45 cable from a working computer. Try using another port on the hub, and make sure your NIC is working correctly. If nothing works, you should also try removing all the components in the Network properties box, then adding them again, one at a time.

Daniel Gardiner



▲ Figure 5

For more detailed information on home and small business networking, see *APC's Networking Pocketbook*, available for \$14.95 at www.magshop.com.au.

AOpen



There's nothing like the great outdoors. Especially when it's whipping past your window at 200mph on the autobahn. Introducing the **Geforce MX Deluxe**, one of the fastest **3D graphic rendering engines** on earth. With nearly 350mhz it will catapult you from 0-60 mph in 1.2 seconds. Its massive brakes and beefed graphics engine provides rock-solid handling in the tightest turns. And for an even greater thrill, they don't come any faster than the **Geforce 2 GTS chipset**. Race in to your nearest **Servex** dealer and **feel the need for speed.**

The Geforce MX deluxe works best with the Servex range of cards:

PA256 Deluxe Geforce 2 GTS DDR • PA3000 8MB (Riva TNT2 Vanta chipset) PA3000 16MB (Riva TNT2 Vanta chipset) • PA3020Pro (Riva TNT 2 Pro chipset) • PA3030 (Riva TNT 2 Ultra chipset)

SERVEX www.servex.com.au

NSW: Best Byte (02) 9436 0788 • Paradigm X (02) 9524 8699 • Advanced Customised Computers (02) 9692 9988
VIC: Best Byte (03) 9561 8777 • Omega (03) 9800 3444 • Sato (03) 9899 6333 QLD: Compuworld (07) 3846 7588
• Omega (07) 3272 2386 • Intermedia (07) 3369 0477 • QLD: (07) 4634 7999 • Sato (07) 32556899 SA: Crest (08) 8351 0500
• Omega (08) 8410 3434 WA: Direct Memory Access (08) 9445 9500 ACT: Cougar Computers (02) 6242 2777
PNG: Datron Electronics (675) 325 6766. Servex Australia Pty Ltd, ACN 076 438 808. AOpen is a registered trademark of AOpen Inc.
All other product, brand and company names are trademarks of their prospective owners.

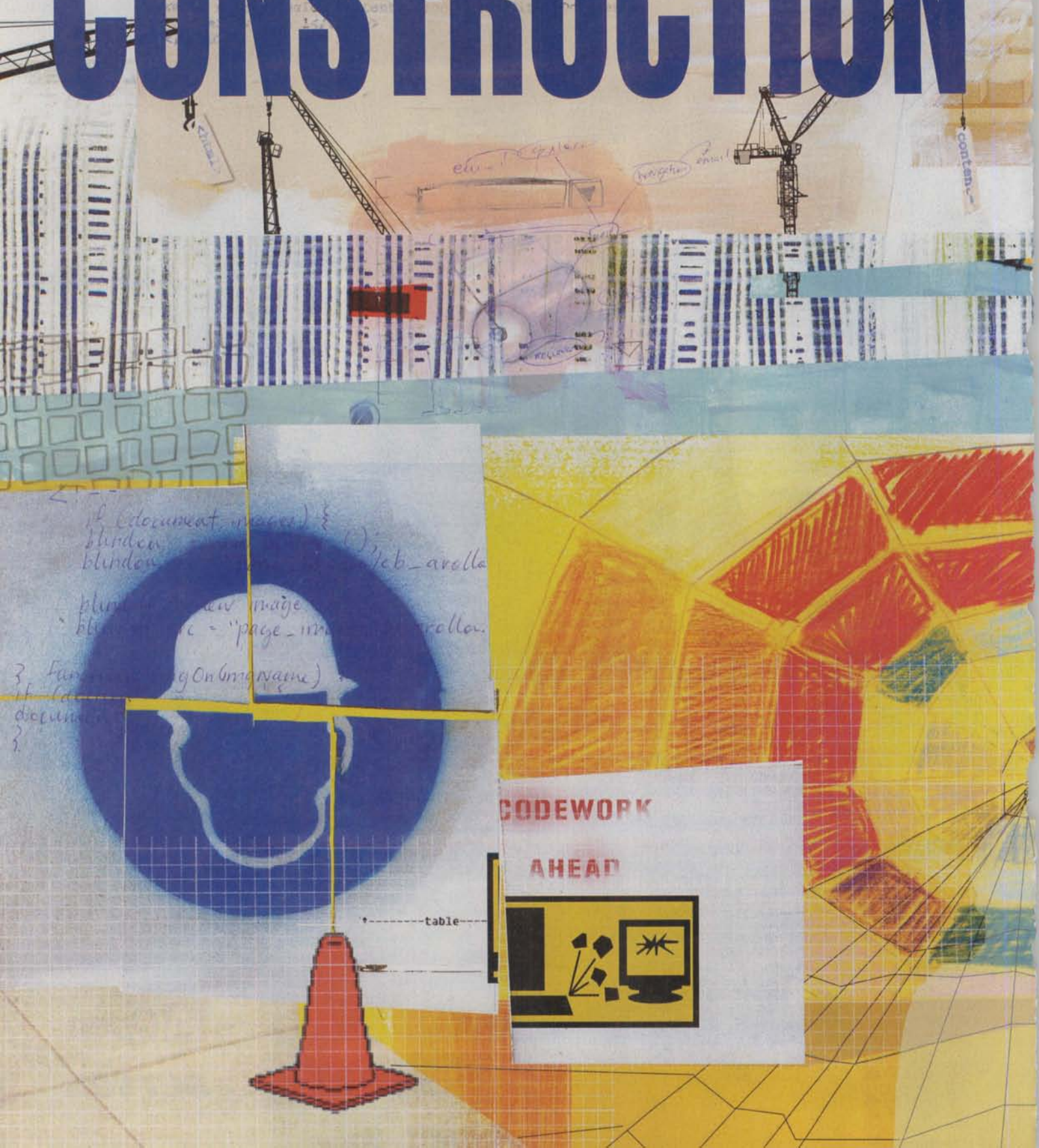


Geforce MX Deluxe



AOpen
servex

CONSTRUCTION



```
<!--  
if (document.images) {  
  hidden = new Image();  
  hidden.src = "page-images/arrow.gif";  
  hidden.onclick = function() {  
    document.location = "page-images/arrow.gif";  
  };  
}
```

**CODEWORK
AHEAD**



SITE

*The Web never stands still. New sites appear on the horizon as established players overhaul their dot com presence. How can your site get the edge in the battle for traffic and revenue? **Nicole Manktelow** finds that simplicity is coming back into vogue.*

'We need a groovy animated introduction, funky Java navigation, and of course, it's got to be black — with just a hint of espresso, darling!

These could have been the words of any Web designer's client in the 1990s. Everyone seemed to want moody, dark pages with unintelligible navigation — except, that is, for those who hankered after flashy multimedia splash screens or retro, Tupperware colour schemes and 1950s-style icons.

How fashions change. In just a few years, site design seems to have jumped decades, and exponents are now using words like 'clean', 'smart' and 'functional'. Don't be surprised if these words sound familiar; they're often used to describe custom-built kitchens. Welcome to the new era in Web design.

It's all about usability, clear communication, and planning, as well as being able to justify design choices in an environment where everyone is preaching the power of purpose, putting products first and creating pages that will be relevant in the future.

Ever complained that a site was too slow? Or that the switchboard number was hidden by screens of pretentious labelling? Spearheaded by interface gurus such as Danish expert Jakob Nielsen (www.useit.com/jakob), the push for usability is a response to common navigation and bandwidth gripes. Considered one of the world's leading Web authorities, Nielsen advocates simple, task-oriented designs that allow you to get what you want quickly.

Sydney Web designer Justin 'Tin Tin' Fox believes that, in the past, many Web designers put their own tastes before the needs of their clients, and in doing so, got in the way of business. "Many designers have been guilty of indulging themselves in creating heavy, dynamic, stylistic artwork for clients who didn't need it," Fox said.

Fox is a founding member of *Australia In Front* (www.australianinfront.com.au), a collaborative ezine that show-

cases the country's best online designers and artists.

"Many designers have an attitude problem, something along the lines of breaking every single graphic design rule there is in order to create something that they would be satisfied with," he reflected.

"I've always believed that the best design is transparent. It works so well that you never really feel the need to question it, and this applies to content-based sites, especially the ones that aim to be accessible to as many people online as possible."

Usability vs graphics

As with all trends, the push for usability has its detractors. Mark Eland, creative director of Brainwaave Interactive, believes a more



▲ The work of the design team at Australia In Front

moderate approach to usability is needed. Otherwise, designers could risk overlooking other, equally important factors.

"I don't think it's good to focus too much on usability," Eland said. "It's only part of the Web design. As much as I appreciate Nielsen's view, I'm not a fan. I think he has too narrow a focus."

"Many people appreciate aesthetics, as long as the navigation is good and the site is quick. I don't think that saying a site is usable and quick is an excuse for not having aesthetics," he said.

There's a perception that graphics are the main reason sites are slow, but Eland believes that they will ultimately make a comeback. "A lot of the older sites were heavily laden with graphics. It's pretty common to hear people say they want a trim Web site without any extra fat. However, 'fat' doesn't always mean graphics. There are about a hundred different things that slow a site down, from the server to the way the HTML is coded.

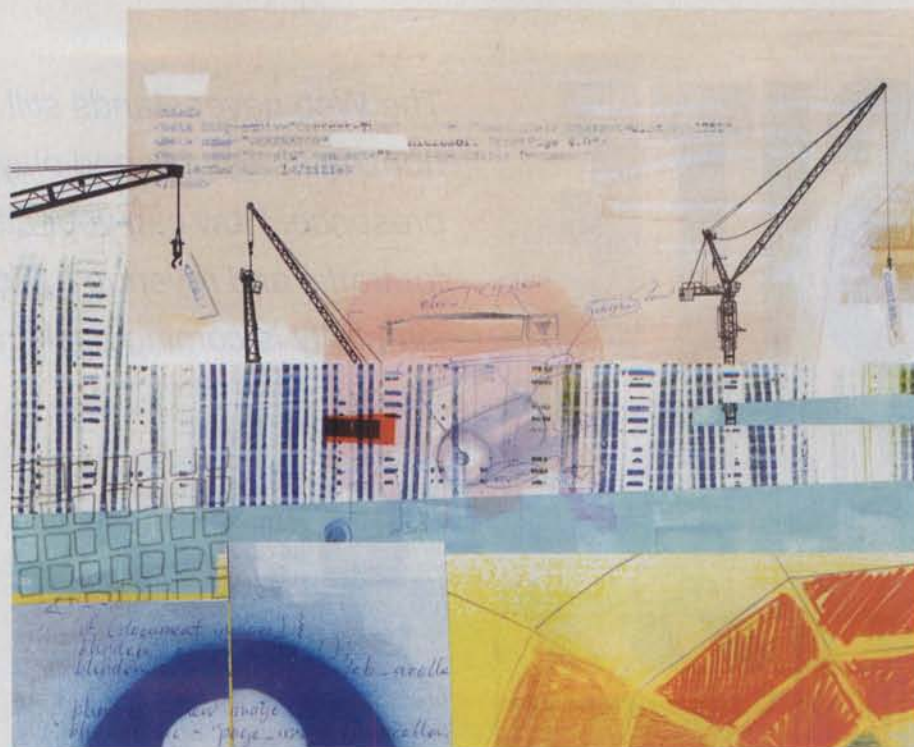
"These days, with the compression techniques available, you can have graphics and still be smart and execute them well. Graphics are what people love. Look at TV; people are drawn to it. Let them have what they want, if they can have it without major sacrifices to speed.

"Clients come in and say, 'Oh, we can't do that, there are too many graphics.' We have to sit clients down and explain it all to them. A single graphic may be 30K, but if you design your site with one of these, it is quicker to load than using 30 graphics of 1K each, because for each one, the browser has to contact the server. You have to keep all of these things in mind."

Eland points to the AMP Web site (www.amp.com.au), saying that its minimal use of graphics does little to increase speed. "The AMP site has a strong focus on usability, and little or no graphics. It concentrates on text, but it has many little elements to download."

Web design is often a balancing act between graphics and the experience of the viewer, according to Massive Interactive's creative director Derek Ellis. "If designers were to focus equally on visual communication and user experience, we'd have a lot more successful sites around. Instead, what tends to take precedence is how good the site can be made to look within the constraints of HTML and the other technology it has to be built in, which is often done at the expense of the user's experience or communication.

"However, there are ways around this. Flash, for example, gives designers the freedom to avoid some of the technology constraints, and due to its 'streaming'



ability, they can use heavier graphics than normal."

A dash of Flash

Macromedia claims its Flash plug-in is now installed on 96% of all browsers. Only a fraction of people are now unable to view Flash content, or have to pause to download software. However, does this high level of acceptance mean Flash is suitable for every site? Not necessarily, according to Eland, who believes the technology still requires careful consideration, particularly in relation to opening pages or site introductions.

"You should allow the user to choose to view these. We try to stay clear of opening splash screens, and get the information up there as quickly as possible."

Brainwaave Interactive produced the historical showcase *Australians at War* (www.australiansatwar.com.au), for the Department of Veterans' Affairs. "For *Australians at War*, there was a huge Flash component. We thought about putting it at

the front, but we held it back. It's probably the best part of the site, but visitors can choose whether or not they enter it," Eland said.

According to Web designer Sammi Needham of Live Networks, more and more clients are asking for Flash to be included in their sites, but in many cases, this is due to the

technology's perceived glamour. "Clients like Flash, but they don't know why. It's not for everyone, and sometimes you have to say no. Motion sucks people in. One client we have really wanted a Flash intro, but the people going to that site won't want to go through all that stuff, so we compromised and used Flash navigation.



▲ The Inside the Sydney Opera House site

"We're seeing fewer Flash introductions and more constructive ways of using Flash now. Inside Sydney Opera House (www.soh.nsw.gov.au) is a brilliant use of Flash, proving that it is best when you are not conscious of it. I think that a lot of people are using Flash badly, with large load times and no justification, when they should be looking for smooth, fast motion. We try to keep it under 10 seconds," Needham said.

Flash technology itself is rarely criticised. However, the way it is used prompts many complaints. There are plenty of gripes within the industry about poorly conceived animations, according to Fox. "It has been used badly, and still is in a lot of cases," he said.



▲ The AMP site has many small elements to download.

Leadtek®

We Make Dreams a Reality

WinFast®

GEFORCE 3 TD

Third Generation Nvidia GeForce3 nfinite FX (tm) GPU.
On Board 64MB -4ns DDR Memory
Lightspeed Memory Architecture
High-Performance Hardware Anti-Aliasing

ALL NEW MX Series Cards are HERE!

GEFORCE 2 MX MAX

• MX-400 chipset, 64MB 6ns SDR, TV Output, Hardware Monitor



GEFORCE 2 MX64

• MX-200 chipset, 32MB 7ns SDR, TV output



NSW Office
■ 02 9648 0888
Fax: 9648 0999
51 Hill Road
Homebush Bay
NSW 2140

VIC Office
■ 03 9646 4388
Fax: 9646 4133
41 Brady Street
South Melbourne
VIC 3205

QLD Office
■ 07 3511 7288
Fax: 3511 7299
2 Mayneview Street
Milton
QLD 4064

BCN Technology

www.bcntech.com.au
sales@bcntech.com.au

"One thing I never really understood was the 'loading' animation. It's taken on a life of its own. Why not spend the loading time getting a message across other than 'loading'? Some Flash movies out there are great stylistically, but its best use is, in my opinion, when it is used to support more dynamic interaction. This is usually in responsive-feeling navigation and transitions between content. Hopefully, we won't need plug-ins in the future."

Familiarity breeds contempt

Is a glass half empty or half full? Is left-hand navigation a useful convention or just boring? The answer on both counts, it seems, is a matter of personal taste.

Good old left-hand navigation is a staple in the Web industry. For exponents of the simple and functional, finding a menu on the left-hand side of a page can be comfortable, even reassuring, and most visitors understand how to navigate the site. However, others see the convention as a poor match for alternative navigation systems.

"Left-hand navigation will never go away completely, but there are other proven ways of navigating," Ellis said. "It doesn't have to be like that. It's used because people are familiar with it, but it's not always the best way."

Other design features and technologies, such as Java and DHTML (Dynamic HTML), are constantly being re-evaluated by the industry. "Java can be dodgy," Ellis believes. "It's a process to load it on your computer. It takes up resources and your computer can't do anything else while the applet is loading. However, with DHTML, the page can be loading other components at the same time."

DHTML has considerable potential, but it also has its problems. "DHTML has browser compatibility issues — not just backward, but forward too. If you built a site for Internet Explorer 5, Netscape 5 and their previous versions, when Netscape 6 comes along, it suddenly won't work."

Ellis points out that users have to modify the development for each new browser release. "If you want a longer life cycle, if you want a site that you don't have to modify for a long time, you will run into problems with a DHTML menu with each new browser release."

The fashion police

What changes faster than browsers? The answer could be fashion. It's fine to keep old clothes for nostalgia's sake, but few people want a Web site in last season's colours.

Under examination

Marketers and advertisers talk about 'eyeballs' when discussing audience numbers, but so far they know very little about where surfers' eyes settle when they visit a site.

Where do Web users look when they view a Web site? Where do they click and how do they use the site? These questions are central to understanding usability. Researchers are now asking them, in the hope of finding clues for improving site execution.

To find out where people look first, whether they notice the subscription box and whether they can work out where they need to go, researchers track eye movements and mouse-clicks. Research company Taylor Neilsen Sofres (TNS) collects this information by closely monitoring research participants while they browse Web sites.

"The technology that we use allows us to view the movements the respondent makes with the mouse directly alongside their visual facial expressions and their verbal comments relating to those movements," TNS spokeswoman Virginia Munro explained.

One Australian site that uses this style of testing is the local outpost of search engine Network AltaVista (www.altavista.com.au). It commissioned two weeks of one-on-one testing with various participants to evaluate the site's performance. Representatives from the search company watched the proceedings as each test subject's experience was recorded and analysed by researchers.

Participants were asked to do some free-range Web surfing and to use the site as they might in real life, as well as complete some more involved tasks using some specific AltaVista services. "We try

to get the tasks very close to reality," Munro said. "We used task-orientated surfing exercises that are specific to search engine sites, such as searching for accommodation for a holiday in the south of France in English."

"The participants then had to send this information through a direct email link on the site to a friend in France. The information was translated into French from the AltaVista site, which is one of the activities you can do on the AltaVista search engine site."

According to Munro, this style of testing primarily examines how easy the site is to use and navigate from the

visitor's perspective. However, the testing technique can also provide other useful feedback. "We get many creative ideas from the consumers as to how the site could be improved in terms of content, 'look and feel', and visitors' immediate needs." This also helps site designers work out which features keep visitors at a site longer.

Testing a design or improving a site does not always require expert monitoring or equipment. It can also be conducted in more informal ways. Live Networks designer Sammi Needham believes that designers can benefit greatly from having access to a general audience. In fact, the less Net-savvy a participant, the better the feedback. "It's important to find people who don't use the Net all the time, like we do," Needham said.

Live Networks often gets members of the public to try out new sites, but does so in a relaxed atmosphere, with coffee and cake. "The company is integrated with an ISP that runs a café. We go to the café and get a lot of different people to test sites out. Investigating how people look at a site, browse it and navigate it is one important way to find faults in structure and navigation."



At the moment, shades of grey are more popular than colours, Needham explained. "It sort of parallels architecture and interior design. There are a lot of greys in fashion in general. On Web sites, there's a lot of grey, angular, contrasting stuff."

'Technical' and 'metallic' are other current design buzzwords, but Eland thinks

fashion invariably has to take second place to practical considerations. Ellis just wishes grey "would go away. When you do corporate sites, you have to consider each client and its product line. Most of the time, it's important to keep it the same as their branding. People shouldn't be doing sites just to be contemporary, unless a site is targeted at a particular demographic."

rome®

**On the road,
in the car,
in your pocket,
in your tape deck!**

**The only MP3 player
with expandable memory
that fits inside your tape deck
(car, home, or portable)**

And wait till you hear it...

Rome Technology Pty Ltd

www.rome.com.au

Phone: (02) 9939 8599



Web tactics for content and services

Australians at War

The Australians at War Web site (www.australiansatwar.com.au) needs to provide a suitable display of pomp and ceremony, as well as making use of historical evidence.



The commemorative and educational Web site was produced for the Department of Veterans' Affairs in association with the Australian War Memorial, and utilises photographs, and audio and video material from wartime and peacekeeping efforts.

Australians at War is a graphics-heavy site. Its creators did not want to impose a strict limit on the amount of content available. Instead, they chose to balance speed and performance with the quality and importance of the images and other content being presented.

The site displays a substantial collection of historical photographs. According to Mark Eland, creative director of Brainwaave Interactive, the company that produced the site, these were managed with careful planning and plenty of compression.

"The site was designed to be as fast as possible, but also with the understanding that bandwidth may improve," Eland said. "It has to last three years, so we anticipate connection speeds will improve during its lifetime."

Lots of images were converted to duotone to create a connection between old black and white material and more recent shots. Brainwaave feels duotone makes the site interesting, as well as helping with image compression.

The large volume of content on the site contrasts with current design philosophy, which favours keeping Web sites trim and taut for peak performance. "There are more than 200 stories there, it's massive," Eland said. "I hope it's where Web design is going in the next three years."

Australians at War also makes sporadic use of Flash, but is careful to ensure that visitors without the plug-in can still use the site.

Inside the house

Gimmicks and games are the right place for Flash, according to Viveka Weiley (www.karmanaut.com), an independent Web designer. "Flash can't reach the entire audience, so it can't be used for anything that is crucial to the site. If it is used with a component for which it is appropriate, then Flash is a great idea," Weiley said.

Inside the Sydney Opera House (www.soh.nsw.gov.au) is a Flash presentation that goes beyond gimmicks and games. Flash animation is used to take visitors on a virtual tour that illustrates the structure and layout of the landmark. It also combines many movable, panoramic images. "This piece would not be achievable without Flash," Weiley said. "You could present the information in another way, but it wouldn't be as much fun. And that's OK, as it's not a core part of the Opera House site."

Inside the House has its own look and feel — an important point of difference from other Flash pieces. "There are not as many canned effects as are often used in Flash pieces. A lot of sites use all the effects, and that means that Flash ends up determining the look. After you've seen one of these sites, you've seen them all," Weiley said.

"Inside the House uses a couple of the cheesy effects, but on the whole, it is innovative. The creators have thought about it properly. They have used the technology to achieve the aim, rather than letting the technology control the result."

White Pages vs Yellow Pages

Results are a key consideration in designing a service-based Web site. Designers need to think about what visitors want to do first when they arrive, according to Australia In Front's Justin Fox.

"Service-based sites, such as Yellow Pages Online, the Google search engine and Westpac Online Banking, load fairly



fast, and I don't question the design," Fox said. "They are intuitive, so you feel productive using them and log off feeling that you've had an easy experience."

Few would argue with an interface that gets the customer to the right place, for the right task, quickly and without confusion. However, Weiley believes designers also need to consider how transactions and results will be presented when the visitor completes a task. It is essential that the back-end technologies deliver what the interface promises. According to Weiley, Yellow Pages Online (www.yellowpages.com.au) is a good example.

"The interface implies that you can filter listings by location. If you want restaurants in Leichhardt, you have to choose a subcategory, but then the first listings you see are places in Circular Quay," Weiley said.

The listings service has made improvements. "Now, it uses a red dot to say that listings are not actually part of your suburb. Unfortunately, you are shown the ones you want to see last," Weiley said. "Obviously, the data is there, but the database structure or how it is being accessed could be improved."



In contrast, the residential listings counterpart, White Pages Online (www.whitepages.com.au), is an example of simple and direct design principles. It allows you to complete an enquiry quickly and without confusion.

White Pages Online also allows you to look up world times and postcodes through a tabbed interface. "The tabbed interface is fairly effective and predictable, and that is exactly what you want from a site like this," said Weiley.

"There are plenty of opportunities for designers to be wacky and unpredictable, but the White Pages or a shop are not those opportunities. Why not do that on your own Web site? The best thing about White Pages Online is that it now opens directly to the search page. It didn't always do that and you had to bookmark the search page to go there directly." ■

Straight from the Source



While online music services battle it out with record companies in the courtroom, some well-known performers are bypassing both parties and offering their own subscription services direct to fans. Is this the future of popular music online?

Angus Kidman investigates.

The online music industry has always effectively operated under a two-tiered system. On one level are the unsigned (and generally unknown) bands. They see the Net as a means of promoting themselves and their music, free of the constraints of traditional record company promotion methods. On the other level are the established acts who have achieved fame without the benefit of Net promotion, but who are now finding themselves online, willingly or otherwise.

The former tend to offer their wares freely to interested parties, either from their own sites or through services such as MP3.com. In contrast, the latter are often at the centre of piracy rows and legal battles over music-sharing services such as Napster. For example, rock band Metallica prompted the recent court case against Napster, and many other acts are indirectly involved in similar legal struggles through the rash of lawsuits launched by the 'Big Five' record companies (see APC March, page 58).

However, a middle ground is slowly emerging. Subscription services run directly

by well-known artists allow them to distribute music directly to their fans. Arguably pioneered by David Bowie's BowieNet service in 1998, the notion of connecting directly with fans has since been widely discussed as a possible future direction for the music industry.

Distributing music in this way appeals to the many music fans who justify their use of services such as Napster on the grounds that record companies are leeches who deprive artists of a fair income. As one fan wrote in a posting to a Prince fan newsgroup earlier this year, "Hopefully, every major record company will go out of business."

This position has also been endorsed by musicians, especially those who have fought to escape from contracts. "Your contract conflicts with your freedom on the Net," rapper Chuck D from Public Enemy, a long-time supporter of the MP3 format, said.

These notions might sound appealing, but how do they translate into reality? Is the music being offered on these sites any good, and is it worth the subscription fee

for anyone other than dedicated fans? To find out, APC reviewed two of the most visible subscription sites: David Bowie's BowieNet and Prince's NPG Music Club. We also examined a representative multi-artist subscription site, EMusic.com.

The small print

Despite the appeal of a musician-centred subscription model, it's unlikely that many artists will use this model in the near future. Relatively few musicians own the rights to their original master recordings; these are generally held by the record companies they are signed to. If the record company doesn't agree to allow the recordings to be released online, the artist has virtually no legal recourse. This has led to rumours that some artists have actively released their own material onto services such as Napster in a bid to 'get back' at recalcitrant record companies. This approach was taken by the Smashing Pumpkins, who encouraged associates to distribute material deemed inappropriate for release by the band's label, Virgin.

The popular artists who have embraced online subscription services in a big way are those lucky enough to possess the rights to their masters. For instance, David Bowie maintains the rights to his work even though he has been signed to at least four major labels (Decca, RCA, EMI and Virgin) in the course of his career. This has not only enabled him to offer an online service, but it also allowed him to make \$US\$5 million after floating future rights to his catalogue in a bond offering back in 1997.

One approach artists caught in the 'master trap' have tried is re-recording the songs that made them famous in new versions. The artists completely own the rights to these new recordings, and can sell them through other media. In an extreme example, in April 1999, Prince threatened to re-record his entire back catalogue for online sales. However, he appears to have since abandoned that plan. The phenomenon is very apparent in the catalogues of many commercial online music providers such as EMusic.com or MP3.com, where new versions of classic hits are considerably more common than originals.

These re-recordings are often of interest to dedicated fans, but for casual listeners, it's a different story. It's almost impossible to reproduce the sound of a recording exactly, and hearing a jarring note or

effect in a well-loved track can completely ruin the experience. What Gloria Gaynor does to her disco classic 'I Will Survive' on the version sold through EMusic.com — skipping and reworking lyrics, adding new guitar flourishes — is little short of criminal to fans of the original.

Of course, owning the rights to music is not an automatic guarantee that it will be released online. For example, alternative outfit REM have retained tight control over their masters, but they are yet to embrace the subscription model. However, the band is not opposed to online distribution; their recent single 'Imitation of Life' was released in MP3 format on fan site Murmurs.com, and later showed up as a free Liquid Audio download on Amazon.com.

Future possibilities

For artists whose music remains contracted to labels, and who don't feel like a lengthy legal battle, there is a glimmer of hope. The most likely way these performers will acquire a full online presence is through the deals currently being worked out between the Big Five labels — BMG, EMI, Sony, Universal and Warner — and existing online distributors. The labels have often been accused of delay-

ing progress towards a fully online model, but the success of Napster appears to have forced something of a rush to introduce 'pay per song' models for downloadable music.

Already this year, BMG, EMI and Warner have paired up with RealNetworks to form a distribution arm known as MusicNet. Sony and Universal have a similar project known as Duet. Locally, BMG and Sony are working with Wired-Records.com, a joint project between music retailer Sanity and EhYou.com, the company behind MP3.com.au. For casual music listeners who want to hear songs by a range of artists rather than rare recordings from previously undiscovered studio sessions, these services are likely to be more appealing than single-artist ones.

A big challenge for providers is working out which format fans want. MP3 has effectively become the de facto standard for music distribution, but few record companies are willing to embrace it as a sell-through format because it can be easily pirated. EMusic.com, reviewed below, is a notable exception. Convincing fans to switch preferences to a more secure format such as Liquid Audio, WMA or SDMI may prove to be the biggest challenge of all in bringing music online.

EMusic.com

There are many sites that aim to make money by selling music downloads from a range of artists, but EMusic.com has a number of distinguishing features. First, unlike MP3.com and similar services, its primary source of music is deals with existing labels. This gives it a rather more recognisable roster than many of the others. Second, EMusic.com continues to use the standard MP3 file format, rather than proprietary (and protected) alternatives.

It allows payments for individual tracks, but also charges a flat \$US14.99 for unlimited access to its archive. Many other record companies are considering adopting this model. It allows you to trial the service and download up to 100 files before committing yourself to the paid version.

Likely to restrict the appeal of services such as EMusic.com is the lack of truly popular music on offer. On logging in, you might be impressed to notice that Elvis Presley tracks are available. How-



ever, these aren't recordings you're likely to remember; instead, they're poor-quality radio recordings dating from 1954. A similar principle applies to many other apparently big names. The recordings available here aren't those that made Green Day or Gloria Gaynor famous, but early albums from their pre-fame days or late-career re-recordings that aren't a patch on the original.

As a result, you're likely to be underwhelmed by much of the famous music on offer. At the same time, there's little point paying for artists you've never heard of when you can do that at loads of

other sites for free. Unless your tastes are particularly eclectic, you will probably be able to pull in all the files you want without exceeding the 100-track limit imposed by the trial offer.

Mind you, the range of music available may change shortly. In April, EMusic.com was acquired by Universal for \$US24.6 million dollars. Universal is planning to offer its own catalogue of artists (which includes ABBA, U2 and KISS, among many others)

on the service, but until then, it's likely to remain an interesting curiosity. However, it still represents better value for money than the single-artist sites discussed above.

- Pros** Extensive trial offer
Support for MP3 format
- Cons** Few new downloads available

Online www.emusic.com

Price \$US14.99 per month for unlimited access; individual files vary

NPG Music Club

Prince, formerly known as the Artist Formerly Known As Prince (he reverted to his original name last year), has been a supporter of Net music marketing for some years. His 1997 triple-CD set, *Crystal Ball*, was initially marketed exclusively by his Love4OneAnother.com site, and he has used the same site to launch a number of free MP3 downloads. In February, Prince committed more heavily to the Net market by launching the NPG Music Club, a subscription-only service.

Prince's prickly relationship with record companies makes him an ideal candidate for this kind of service. Throughout the 1980s, he complained that Warner, his label at that time, was unwilling to release most of the music he was producing. Prince split with the company in 1996, and has since had deals with EMI and Arista, both of which ended unhappily with just one album each.

The NPG Music Club (the name derives from yet another of Prince's aliases) offers two subscription models. For \$US7.77 a



month, you have access to an archive of at least three songs and one 'audio show'. A premium membership, priced at \$US100 a year, adds a free special edition CD, extra unspecified downloads, and priority access to Prince concerts.

The service is evolving rapidly. Since the February launch, it has abandoned its use of a customised player requiring a QuickTime plug-in, in favour of standard MP3 files available in 128K or 256K encodings. It now also provides fans with the option of having files emailed to them.

The music is standard Prince material: high-grade funk with whacked-out lyrics. However, its value for money is question-

able. With just three full songs available, the service doesn't compare particularly well to a full-priced single. One of the three songs listed when APC signed up had also been officially 'released' onto Napster in a flurry of publicity. The 'audio show' is a 45-minute compilation of tracks that is cumbersome to download because of its size, and repeats some of the songs offered for standard download.

For fans based in the US, where Prince is now touring regularly, premium membership might be worthwhile solely for the extra backstage access. However, for local enthusiasts, the benefits are rather less clear, and casual listeners would be better off heading to Napster.

Pros Wide range of distribution options
Cons Limited choice of music
Overpriced

Online www.npgmusicclub.com

Price \$US7.77 per month or \$US100 per year

BowieNet

BowieNet was probably the first full Web service supplied by a musician to fans. Bowie's insistence on retaining control over his back catalogue has put him in the enviable position of being able to offer music online without legal hassles with his current record company. US fans can use BowieNet as their ISP, but Australian fans are restricted to the standard service, which costs \$US5.95 a month and promises a "virtual backstage pass to the world of David Bowie".

The site emphasises community development rather than music distribution. Members receive 'points' for contributing news items or participating in discussions, and prizes are awarded at regular intervals to those with the highest scores. Each member is also allocated several mail addresses and 10M of Web space.

Members were treated to a members-only David Bowie concert last year, and a CD documenting Bowie's 1997 tour is currently being developed based on input from members. These features are wel-



come, but Web space and mail addresses can be obtained online for free anyway, so they have little value.

What about the music? The site provided bonus downloads for members in the past, but its current focus is on BowieRadio, a RealMedia streaming service playing a mixture of Bowie classics and rare, often unreleased material. As this service is restricted to subscribers, throughput speeds are much better than those usually achieved by other Net radio services.

Eventually, the site plans to offer two more channels, one with material by other artists given the seal of approval by

the Thin White Duke, and the other presenting material for children. There's also a rotating catalogue of members-only video footage. When APC signed up, Bowie's 20-minute movie from 1984, *Jazzin' for Blue Jean*, was headlining.

The BowieNet service has been constructed with care and attention to detail, and chatroom comments suggest that it's a real hit with existing subscribers. Nonetheless, it's hard to imagine the service appealing to anyone

beyond Bowie's (considerable) base of hard-core fans.

Unfortunately, BowieNet offers little insight into how artists without such an extensive archive to draw on might use the Net to further their careers.

Pros Well-developed community products
24-hour radio service
Cons Few new downloads

Online www.davidbowie.com

Price \$US5.95 per month

Corporate briefs

Windows waits for 2002

Windows XP will be released on October 25, but corporate users will have to wait a bit longer for a significant upgrade to the Windows 2000 server. The next edition will be known as Windows 2002 and, as the name suggests, it isn't expected to hit the streets until early next year. Application compatibility issues are reportedly contributing to the delay in shipment. Early beta testers have reported that even some of Microsoft's own applications, such as Exchange Server and BizTalk, are having problems running under current releases.

Meanwhile, Microsoft has gone to great lengths to deploy a patch for existing users of its IIS Web server product after researchers exposed a major security glitch. The ISAPI filters in IIS 5.0, which is included with Windows 2000, created a security risk, leading Microsoft to delay the shipment of a planned service pack for Windows 2000.

Database consolidation

The database market continues to shrink, with IBM announcing a \$US1 billion deal to buy the database business of faltering rival Informix. Under the plan, announced in April and due to take effect by the end of September, IBM will continue to market Informix's lines, but will also incorporate some features from Informix products into its own DB2 range. DB2 will remain IBM's key enterprise database technology.

B2B no bargain

One of the most commonly touted benefits of online procurement is lower prices, but a new survey casts doubt on the idea that B2B transactions are attractive mainly because of their cost benefits. A study of 1,000 corporate buyers conducted by Accenture found that 80% ranked a recognisable brand name as more important than lower prices when purchasing online. A similar percentage cited reliable customer service as essential. Corporate buyers were generally less satisfied with Web purchasing experiences than individual consumers were.

AusBulk saves big

Bulk processor AusBulk has adopted bandwidth-shaping technology to handle the mass of data clogging its expensive wide area network (WAN). With 23 grain processing sites spread across rural South Australia, the \$150 million per year business is one of South Australia's largest companies. It has tried several strategies to manage its data load, but has failed to find the right solution until now.

AusBulk has used 64Kbps ISDN lines for some time to support employees at remote sites where grain shipments are received and processed. Information about each shipment is entered into OMS (Operational Management System), a client/server application that uses the WAN to send shipment information back to the head office's SQL Server database.

The peak harvest season between late October and January often sees a glut of data entered into the system. Combined with email, file access, Web browsing and other traffic, this glut often overloaded the ISDN lines. Also, AusBulk often had to ship piles of paperwork to Adelaide for error-

prone manual processing. Eventually, the company spent \$100,000 per year to upgrade its 11 busiest sites to 128Kbps ISDN.

However, it was soon clear that without proper bandwidth management, even these links would be inadequate. Packet-Shaper technology, supplied by network equipment maker Packeteer, was then trialled. The trial confirmed that Packet-shaper could smooth traffic flows by reserving 96Kbps of the 128Kbps link for OMS. The bandwidth is freed for other uses when OMS volume is low, but during peak season a smoother flow of information is delivered.

Installation of a dozen PacketShapers has delivered direct cost savings — an estimated \$65,000 per year in bandwidth and overtime costs — and has eliminated data errors from manual entry. According to Paul Bassett, technical services manager with the bulk handler, it will also support coming thin client applications based on Windows Terminal Server. As many as 18 more sites may be introduced in SA, NSW and Victoria this year.

David Braue



This month's buzzword: elead

Why do we need this word?

Despite the current scorn for any word that has the letter 'e' attached to the front, or the letters '.com' whacked on the end, some members of the marketing community still believe there's a certain cachet to be gained from exploiting these appendages. This mode of thinking has brought us terms such as 'ebusiness', which looks likely to survive for the medium term, and now 'elead', about which Buzzword has some grave doubts.

What does it mean?

Following the principle that adding an 'e' to the front of a word retains the meaning but makes it 'electronic', the term 'elead' is generally used to describe a potential marketing lead that has been sourced by electronic means. Responses from spamming programs, click-throughs from banner advertising schemes and email enquiries from prospective customers

are all described as eleads.

The term has also been applied to more general harvesting techniques, such as combing the Web for addresses, but this is a less appropriate use of the word. Is anyone really going to describe the White Pages Web site as a 'goldmine of untapped eleads'?

Where should I use it?

Buzzword considers this term best avoided, as it doesn't offer any advantage over the usual term 'lead' — unless you enjoy confusing your colleagues. If you feel that deploying the term is essential, it's probably best used in a contrastive context. An utterance such as 'Our sell-through rate for eleads is lagging well behind for the July quarter relative to the existing client base' is perhaps marginally less likely to lead to hoots of derision in your next marketing strategy meeting than other uses. However, we can't promise anything.



The grand XML schema

After two years of development, the XML Schema specification was finally released in May. The specification is designed to ease the deployment of applications that use XML.

"XML Schema makes good on the promises of extensibility and power at the heart of XML," Tim Berners-Lee, director of the World Wide Web Consortium (W3C) and the original creator of HTML, said. Berners-Lee officially launched the specification at a W3C event in Singapore.

XML was officially certified as a W3C standard in February 1998. It provides a common meta-language that can describe data and formatting structures for almost any kind of information. For instance, trading partners in the construction industry can develop a common format for information about equipment, making it easier to trade information electronically. Unlike HTML, XML can carry formatting information separately from data. This makes it easier to reformat information for different platforms such as Web browsers, mobile phones or portable digital assistants.

However, because XML was developed as a subset of SGML (Standard Generalised Markup Language), it inherited the concept of document type definitions (DTDs) from that system. Creating DTDs is time-consuming, because every possible data element needs to be rigorously defined. The XML Schema simplifies the process, providing a set of shared vocabularies, data types for common elements such as times and dates, and a standardised structure for documents that use them. Supporters say the result is a system that can be deployed far more quickly than standard XML.

Despite the two years of work that have been devoted to the project, some industry observers have been critical, saying that it is overly complicated, especially for smaller developers. The consensus method of approval favoured by the W3C has also prompted some complaints that the implementation is too slow.

Inevitably, several rival systems have emerged, the most notable being TREX. Developed by James Clark, another leading light in W3C standards development, TREX also provides a basic validation service for XML documents, but unlike XML Schema, it doesn't deal with any application processing semantics.

"There is a genuine need for a straightforward, easy-to-learn XML schema language, and TREX delivers that," Clark said. In March, the TREX specification was taken up by OASIS, another group that develops global interoperability standards. However, the proposal isn't completely removed from the existing W3C efforts; TREX can also work with XML Schema data types. A final specification is expected by the end of the year.

Hundreds of languages

Even before the introduction of schemas, XML had been quickly adopted by a huge number of software developers and industry groups as the basis for their information exchange systems. Many different specifications based on XML have emerged, covering everything from vector graphics to network directories to migrating HTML sites into the XML environment. The profusion of specifications has led some developers to

Contents

This month in Corporate IT

Knowledge management

You've heard all the hype, but how effective is it really?

119

PKI

A widespread government commitment to Public Key Infrastructure is encouraging its adoption.

121

Careers

Java skills still give IT workers the employment edge.

124

Patch Panel

The Patch Panel section on CD 1 of APC's cover CD pack includes the latest patches and updates for a wide range of operating systems and applications.

complain that the promise of a simplified data structure has been replaced with a new kind of fragmentation. This is especially true where rival software developers have created standards aimed at solving the same problem, such as network directory management.

Nonprofit industry consortium RosettaNet has attempted to overcome the problem by creating a conceptual model where existing XML efforts overlap. "Many private companies and industry organisations today are proposing a wide array of standards for creating this common ebusiness language — so many, in fact, that it is becoming increasingly difficult to differentiate between the multitude of vertical and horizontal industry standards," a white paper on the group's Web site noted. "There is currently no way of easily identifying the ebusiness standards challenge each standards organisation strives to resolve. Perhaps more importantly, there is no mechanism for standards bodies to identify where their efforts may be duplicative and where they may be complementary."

To attempt to eliminate that problem, RosettaNet has created a conceptual model that indicates the key areas that XML standards need to address. This makes it easier for individual organisations to work out where their initiative is positioned within the overall business process. More information on the model can be found at www.rosettanet.org.

Angus Kidman

The complete ebusiness XML system

Universal specification scheme and architecture

Supply chain business processes

Supply chain technical dictionary content

Business model business processes

Universal business processes

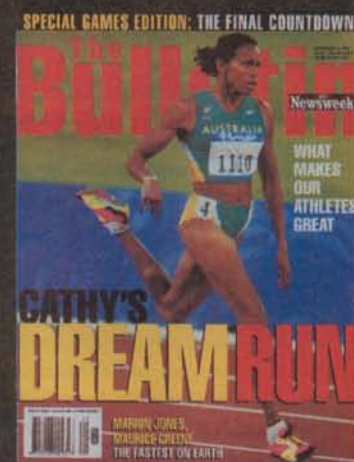
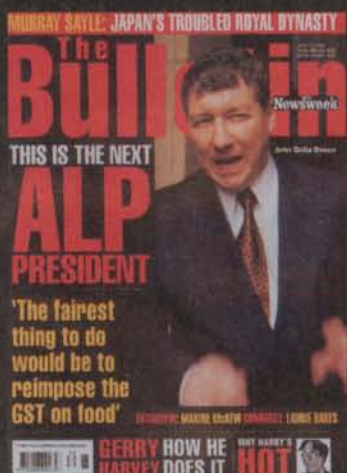
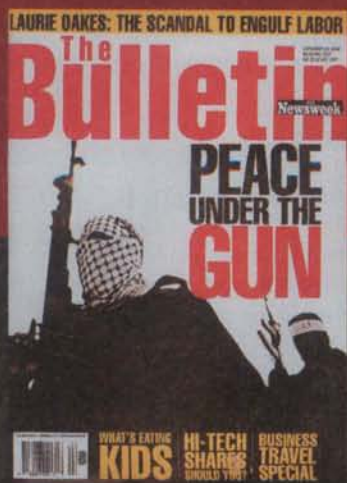
Universal technical dictionary structure

Universal business dictionary structure and content

Universal registry and repository structure

Universal messaging structure

Source: RosettaNet



SPECIAL APC READER OFFER

\$99

50 ISSUES
(12 MONTHS SUBSCRIPTION)

SUBSCRIBE NOW and you will get all the current affairs, politics, sports, economics, business, and arts news you need for **less than \$2 a week!**

Don't miss this strictly limited offer: simply subscribe or renew your subscription to *The Bulletin* for only \$99 for 12 months, and **save \$148.50** off the newsstand price or \$179 for 24 months and **save \$316** off the newsstand price! That's less than \$2 an issue.

SIMPLY CALL 136 116
now (8am to 8pm EST Monday to Friday and 8am to 6pm EST Saturday).

The Bulletin Newsweek
It's all you need to read.

Is a little knowledge management a dangerous thing?

Knowledge management has been heavily hyped over the last few years, but is it delivering on its promises? Angus Kidman assesses the state of the technology, and examines how to make knowledge initiatives most effective.

In a 1998 paper, *Ushering In The Knowledge-Based Economy*, Delphi Group analyst Carl Frappaolo wrote, "To reach their goals and beat the competition, corporations must continuously one-up their own products and services. To succeed, an organisation must take stock of its intellect. This is the impetus behind knowledge management."

Frappaolo's comment is typical of the enthusiasm that surrounded knowledge management (KM) at that time. Manufacturers were racing to proclaim that they were part of this new revolution, even if products were sometimes thin on the ground.

Unlike other heavily hyped technologies, expectations for KM continue to be high. A study by Ovum has predicted that the market for these tools will top \$US113 million in the Asia-Pacific region alone by 2002, and that an average annual compound growth rate of 54% will be achieved. However, what makes up the KM market is still less than clear. There doesn't even seem to be complete agreement on what the term means.

"The term 'knowledge management' has more different meanings for more different people than any other market term we can think of," according to a white paper on the subject issued by Eastman Software earlier this year. Any combination of business practices and software that is designed to help companies make better use of the knowledge and practices of their employees can qualify for the KM label. It incorporates everything from conventional document management systems through to complex collaboration environments and company intranet systems.

More recent concepts such as elearning have also been added to the overall KM field by some analysts, but others see them as separate fields. "Knowledge management is only part of a complete business-to-employee solution," Steven Melville, Australian managing director of consulting

company Ingena, said. "Other components are access, learning and collaboration."

Others argue that the label is unimportant; that labelling this way merely reflects a trend in the industry to apply different labels to the fundamental problem of encouraging people to share information. "Knowledge management is so many things to so many people," Jeff Sussman, managing director of consulting firm Delphi Group Australia, said. "One of the problems is that people try and put it in a box, and as soon as you try and put it in a box, it loses its meaning."

Despite some confusion, it's generally accepted that KM comes into play when a company makes a conscious effort to encourage the use of technologies for knowledge sharing, rather than just to cut costs or solve other problems. An email system used to notify staff members about who's out of the office probably doesn't qualify as a KM system, but one with automatic

global indexing and agents to provide staff with bulletin board postings on topics of their choice probably does.

"In the early days, there was no definitive text for knowledge management," Shawn Callahan, knowledge management client services director for Lotus Professional Services, said. "That seems to have come together now. For quite some time, people were talking about what knowledge management was. Now, there are concrete initiatives."

Small is beautiful

However, many of those initiatives are probably not as comprehensive as the early promoters of KM expected. Small projects designed to share knowledge in a specific

area have fared considerably better than massive company-wide initiatives based on a single-vendor solution.

"You can't just take the technology and say 'I'm going to push it out to everybody' and expect it to make the difference," Sussman said. "Australia is littered with the wrecks of million-dollar investments in technology that never worked."

"Each individual organisation needs to determine what knowledge management means to them and how to implement it," he said. "You must know why you're doing it; you must know what you're trying to achieve; you must have some metrics so you can justify it."

The solutions can be very simple, Sussman said. A basic strategy such as a chat-room might be ideal for initiating group collaboration, and adding agent and index technologies ensures that the information is retained in a form that others can use. Portal-style interfaces that communicate with diverse repositories of data continue to be a popular strategy for many companies, but Sussman said that different technologies work better for different organisations. "I don't see any specific peaks and troughs; I just see different technologies coming along."

The key is ensuring that the system will solve a real problem and can be efficiently implemented. "From our perspective, it's very much about trying to hit little areas, get small pockets, have quick wins, and then it will find itself filtering throughout the organisation," Sussman said.

"People are looking for achievables," Callahan concurred. He summarises the best approach to implementing a KM system as "think big,

start small, deliver rapidly". Targeting one specific task — such as gathering together the various production methods used in different locations to reduce costs by ensuring best practice is followed everywhere — delivers immediate, measurable



▲ "Knowledge is not worth collating unless it's in some form of strategy."
Shawn Callahan



▲ "Australia is littered with the wrecks of million-dollar investments in technology that never worked."
Jeff Sussman

benefits. It can also create a system that can be adapted to solve other problems as they arise.

The breadth of the KM concept means that many pre-existing products within the enterprise have been used individually in KM solutions. For instance, Lotus's Domino environment was frequently used for KM-style projects before the term came into vogue. A number of delays in the delivery of Lotus's 'official' KM products, the K-Station desktop (available late last year) and the Discovery Server (officially released in April), has meant that many Notes users have had to make do with Domino's existing functions to share information.

Another notable example is the venerable Australian-developed ISYS search system. The ISYS range of products now includes add-ons designed to enhance its KM functionality for individual users and administrators. However, its most important function remains its high-speed indexing system, which can rapidly search through documents in different formats and deliver a summary.

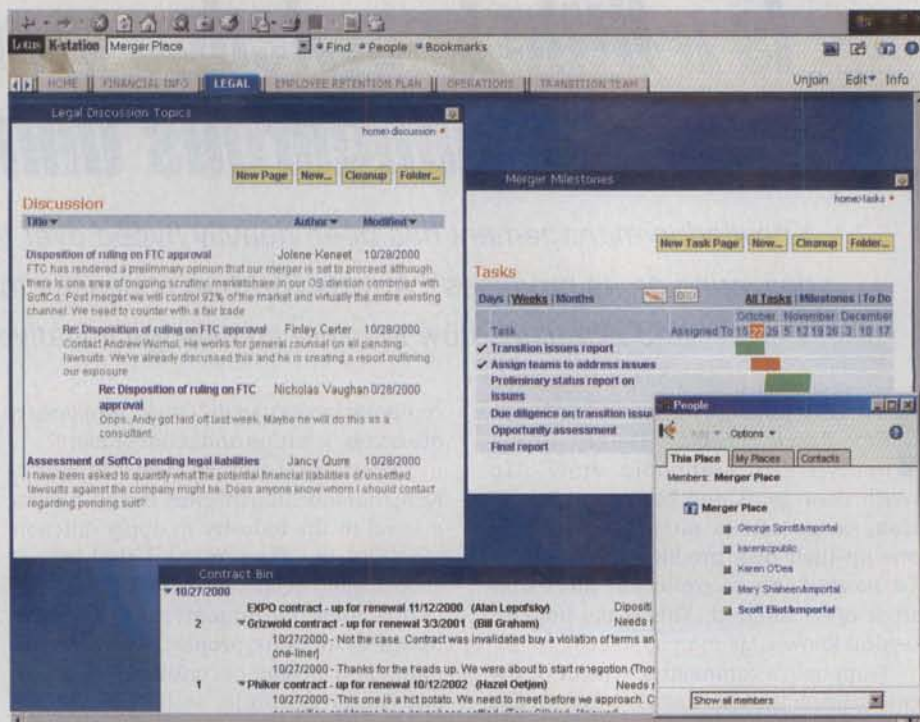
One advantage of this 'stealthy' approach to KM is that it minimises the need for retraining. Rather than asking people to lodge documents in a new system, they continue saving to standard locations. Document availability is then advertised through ISYS whenever a relevant search is made.

Sharing it around

One of the ongoing challenges with any KM system is convincing people to participate and contribute their knowledge. Even with effective systems for sharing information in place, many people equate their unique knowledge of the work environment with job security, and fear giving away information. Others are willing to share, but want some recognition for the time spent in contributing their knowledge. "The cultural areas are the biggest source of resistance," Sussman said.

Lotus solved this problem internally by using a points system. Staff members were given points whenever they added knowledge to the central database, and whenever that data was accessed and used by someone else. This approach rewards individuals for their contributions, and also encourages wider use of the system. Callahan now recommends a similar strategy to other clients.

Adopting a knowledge management system can also require other changes within a company. For instance, organisations that charge for time spent might need to abandon that tracking approach when it comes to sharing knowledge



▲ K-Station is one of Lotus's official knowledge management solutions.

within the business. "If you're looking internally at an organisation, I think you've got to ask: what is the cost of me not sharing? Can you afford not to let people share?"

Whatever tracking method is used, adequate education is vital. One of the truisms of the KM field is that creating a knowledge culture among people is more

knowledge management to be scalable in an organisation, you must have technology," Sussman said. "Technology is a necessary but insufficient enabler. A lot of the time, people say, 'it's not that we have a tendency to hoard, we just don't have the ability to share'."

Moving forward

Inevitably, once a KM system reaches a certain degree of maturity, usage drops off. Why keep seeking out new information if you have refined processes to the nth degree? Under those circumstances, Callahan recommends considering new initiatives to codify knowledge from other aspects of the business. "When knowledge is codified, but hasn't been distributed, that's when it has its greatest potential value," he said. "In an industry that is rapidly changing, your best approach for maximum profitability is to drive and accelerate that cycle."

However, it's important that those new initiatives have business motives that are as compelling as the original project. "Knowledge is not worth collating unless it's in some form of strategy," Callahan said.

"I don't think anybody has a philosophical problem with knowledge management," Sussman said. "There's no manager in Australia that doesn't agree that they need more innovation. What stymies them is the question, 'How do I actually do it?' But you can't afford not to do it." ■

*Creating a
knowledge culture
among people is
more important and
more challenging
than selecting what
software to use.*

important and more challenging than selecting what software to use. KM projects can fail if the input of all staff isn't sought early in the process. "Not all employees can be aware of all the technical options, but they can certainly tell you, if asked, how they would react to new possibilities, which would work and which they would leave to flounder," Melville said.

An extreme version of this argument holds that technology is almost entirely irrelevant, and that cultural issues should predominate when planning a knowledge initiative. Many observers reject this. "For

Is PKI finally securing its future?

*Public key infrastructure (PKI) certification has been an outstanding example of technology hype and paranoia — lots of talk and not much action. However, **David Braue** discovered that government, manufacturer and customer commitment to the technology is finally encouraging its commercial adoption.*

Privacy and the security of healthcare information have been hot issues this year. The enthusiasm of patients for the recently granted access to medical records has been tempered by growing concern over the security of that information online. This hasn't stopped Melbourne startup eClinic from realising its vision of delivering an online interface that the medical community can use to access to patient information sources.

Since going live at the beginning of the year, eClinic has been working with leading testing laboratory Gribbles Pathology to allow doctors to retrieve patients' medical test results, which are crucial to evidence-based medicine, through the Web. Access to the system is carefully managed with digital certificates issued by PKI provider eSign.

Each participating clinic is given a digital certificate. This guarantees that people accessing the system are doing so from that clinic. Individual doctors — over 500 are already registered — then use a unique **userid and password** to verify their identity. In collaboration with partners such as pharmaceutical and medical supply companies Livingston, Novartis, CSL and Beare, eClinic is also allowing doctors to order supplies and drug samples online.

"Doctors were looking for something meaningful to use the Internet for," said eClinic joint managing director Saurabh Mishra. "This provides a lot of convenience and efficiency to doctors, since patients' results are available to them when they're finished, instead of being mailed, couriered or faxed as in the past. Each digital certificate tells us who the doctors in that clinic are. It's still too costly to issue certificates to each doctor individually, but hopefully at some point take-up will be strong enough for that to happen as well."

Everywhere, but nowhere

This steady process of adoption by eClinic is one of just a few success stories behind PKI technology, which facilitates encryption and decryption of information to send it securely across the Internet. It is an extension of standard public key/private key technology, which allows people to transmit information securely, without having to reveal their secret keys for decryption. In PKI, the public key is combined with a unique digital signature issued by a certifi-

recipient, who can then proceed with the transaction confident of the other party's identity. PKI support has been built into Web browsers and applications such as Lotus Notes for years. It is used to authenticate Web servers as part of the universally used SSL (secure sockets layer) encryption technique for securely transmitting credit card details and other sensitive information between Web site and visitor.

According to IDC senior software analyst Natasha David, Australian awareness of PKI is growing, but widespread corporate adoption remains elusive. "Drivers for trust don't go away, but PKI has been held back thus far because of scalability issues and the need to deploy it for single apps," David said.

"Integrating and managing multiple applications was often left for end users to do, and when you leave integration to them, they're left feeling that the technology was supposed to help but it's only made life more complicated. But over the next two years we're going to see a real critical mass developing within the server certificate market as companies look to create that trusted environment."

Many companies have also been deterred by the fact

that setting up a CA costs millions of dollars, much of which is dedicated to ensuring that the CA's invaluable private key is not compromised. The investment is so substantial that few companies have been able to justify doing so.

Even outsourcing CAs has not been entirely successful. Several years ago, Australia Post launched its KeyPOST PKI service, but last year it pulled the plug after dismal certificate sales and a lack of compelling applications for them. Australia Post has opted to act as a registration authority only, checking paperwork to verify the identity of a digital certificate appli-



cation authority (CA). This produces a single digital certificate that contains all the information needed to confirm that the public key belongs to the sender.

When a person receives digitally signed information, their software uses the information in the certificate to contact the CA that issued the certificate. That CA checks that the received key belongs to the person who sent the message, and then looks up the certificate to make sure it's not on the certificate revocation list, a constantly updated list of expired or revoked certificates. If all is well, confirmation of the certificate's validity is returned to the message

cant. In doing so, it has left the heavy lifting to third-party CAs such as eSign (a joint venture between Com Tech Communications and major CA VeriSign) and Baltimore Certificates Australia (a spin-off of PKI stalwart Baltimore Technologies).

Both companies issue certificates to a small number of Australian users from secure, multimillion-dollar facilities. Initially, business was slow as the corporate community waited for the government to take a definitive stand on the technology. In 1998, the National Office for the Information Economy (NOIE) released Gatekeeper, a broad set of standards and strict criteria necessary for digital certificates to be acceptable for use when interacting with government departments.

"You can't do normal commerce, 'e' or otherwise, unless things like authentication, confidentiality and nonrepudiation are in place," general manager of NOIE's Government PKI Branch Peter Anderson said. "The 1996 *Investing for Growth* report sets out a blueprint for where the Commonwealth Government will use its position as a purchaser, acquirer and user of IT&T services and resources to play a leading role. The aim is not just to get this up in government, but to make it more applicable in the economy."



Gaining Gatekeeper accreditation is no easy matter.

Gaining Gatekeeper accreditation is no easy matter, and it was 1999 before Baltimore's UniCERT solution achieved entry-level certification to the system. Last year, eSign reached the same milestone, and these days both companies are fully accredited issuers of digital certificates. Baltimore also achieved accreditation under the defence-level ITSEC E3 certification last year, and in May the Defence Signals Director awarded eSign EAL4 (Evaluation Assurance Level 4) accreditation under the ISO's 14-nation Common Criteria security assessment program.

The latest entrant into Australia's PKI market, Entrust, is working furiously towards Gatekeeper certification after it and local partner KeyTrust spent \$3.5 million to open a secret-grade data centre in Canberra this year.

Government driving the PKI bus

Government projects account for the lion's share of certificate deployments so far. The first was the Australian Taxation Office

(ATO), which uses Baltimore's UniCERT platform to issue and manage digital certificates used by companies to lodge business activity statements over the Net. About 95,000 businesses (about 3% of all Australian businesses) now use the certificates.

With wrinkles in the system largely smoothed out and take-up growing steadily — if not quickly — the ATO's experience with PKI has encouraged other government bodies to follow suit. For example, the Health Insurance Commission is going ahead with plans to use certificates to improve online access to medical records, and other government authorities are using PKI to move hundreds of thousands of documents online.

Next year, Land Information New Zealand will begin a pilot program using PKI services to secure and authenticate changes to property-related information made by more than 2000 lawyers, government authorities, surveyors and other interested parties. "We were adding shelving space at the rate of one kilometre per year, but now we're bringing together all the records that were in five separate land districts into one national database," CRS2 development manager Richard Bloor explained. "We've chosen PKI as the best-practice security mechanism that we

can identify at the moment and are building it into our system."

Victoria's Transport Accident Commission (TAC) also needs to authenticate employees who access critical information. It uses eSign digital certificates to encrypt and digitally sign the contracts, emails, documents and other communications generated by its 400-plus employees.

Climbing the learning curve

As these public sector early adopters work their way through the policy issues and practical complexities of moving traditionally paper-based processes online, private enterprise is gradually warming to the concept. Many are now using PKI in a limited way, or planning pilot projects in the near future.

Several PKI companies are taking a higher-level approach in an attempt to make implementation easier. They also hope to win customers by saving companies the massive cost of running their own secure CA facility.

"People realise the importance of trust and PKI has always been associated with trust," KeyTrust managing director Charles Greatrex said. "But generating a digital certificate without an application is like selling someone a pet rock. The federal government has got the right vision for where this should go, but because it isn't an application developer, companies are left with the obvious problem of making the environment operate."

KeyTrust offers tools for secure PKI-based email, policy and document management; authentication of remote users over encrypted virtual private networks; and highly secure forms management and processing. Greatrex believes the service-based approach will encourage experimentation and eventual adoption in online applications where trust is central.

Other PKI providers have recently jumped on the services bandwagon. In February, eSign opened a PKI Training Centre in Melbourne to promote development of PKI-based applications. At the same time, it announced it would extend its alliance with security developer SecureNet to include the Sun-Netscape Alliance venture iPlanet E-Commerce Solutions. The three now plan to integrate their technologies and market the result to banking and financial services organisations.

Another recent entrant is PricewaterhouseCoopers (PwC), which is selling PKI-based services through its beTRUSTed subsidiary. According to Stephen Wilson, director of PwC policy and strategy, and chair of the Certification Forum of Australia, PwC's investment in the technology is valued at about \$US100 million. Its Australian data centre will join similar sites in the US and UK.

"Building a CA really is rocket science," Wilson said. "We've done that work and we offer it through economies of scale to save our clients costs, which could run to over \$US5 million and take 12 months or more if a company tried to do it themselves."

Policies quelling uncertainty

However, the TAC's executive general manager of information technology, Tony Marxsen, warned that simplifying customers' implementation of PKI technology is only a small part of the total solution. "We exchange information on paper with various law firms, hospitals, police and so on," he explained, adding that the TAC's massive case load means it has been collecting paper at a rate of more than 10,000 pages per employee per year.

"But we have a formal written policy that says 'no sensitive information is to be sent by email'," Marxsen said. "We soon

came to the realisation that encryption of email is essential, but we also raised many business issues; for example, does the company stand by signed email? Who is authorised to sign? What information goes on the certificate? Can we allow private use of employee certificates? What about private key management discipline? Issues with PKI are 80% policy and contractual, and 20% technology."

One of the biggest problems with PKI has been uncertainty over the legal status of documents signed using electronic rather than physical means. However, corporate hesitation has gradually been overcome by the introduction of the Commonwealth Electronic Transactions Act 1999. Section 9 of this act elevated electronic writing to the status of conventional writing in government transactions, and section 10 gave binding power to electronic signatures, as long as the method of delivering those signatures met the recipient's standards and "was as reliable as was appropriate for the purposes for which the information was communicated".

The act propelled Australia to the forefront of global PKI adoption. It came a year after Singapore's Electronic Transactions

tion. This is because companies still need to reconcile their own policies to ensure consistency between all business partners. "We want to have design teams, draughtsmen, engineers and others sharing information electronically, and you don't necessarily want to have that information crossing the public Internet in unencrypted form," AANX business manager with the Federal Chamber of Automotive Industries Klaus Jahn said.

The AANX (Australian Automotive Network Exchange) is the local affiliate of a growing worldwide network of automotive suppliers and manufacturers. Last September it began using KeyTrust certificates to allow business partners to identify 10 message-handling gateways distributed across its network. When a large order comes through, the recipient can check the digital certificate to ensure that the order was placed through an official AANX gateway.

Broader use of the certificates to identify companies and individuals "is a matter of individual companies putting certain requirements forward regarding policies, who they allow into it, and so on," Jahn said. "I think it will take some time for companies and individuals to realise PKI is the way to do this. We've

and Gatekeeper and, in the process, to create a common ground for government and private-sector PKI.

"Project Angus is all about banks appreciating that to enable B2B e-commerce, there needs to be some formal cooperation between participants to enable transactions to pass to other companies," according to Brian Mecklem, Project Angus chairman and general manager of global payment systems with the National Australia Bank. "We're talking about all businesses in Australia being able to do business with one certificate, and we think that's a good opportunity for our customers. Making the decision to run with Identrus opens up the door for authentication virtually immediately, because it already has the necessary rules and policies in place."

Project Angus received a major boost in April, when it was announced that eSign would be the first organisation to issue Australian Business Number Digital Certificates (ABN-DSCs). These new certificates are irrevocably tied to the ABN adopted last year as a standard form of business identification.

As they're based on the ABN, ABN-DSCs are positioned to become the de facto stan-

Survey: What are you using digital certificates for?

Now

Within the next 24 months

Authenticating customers, suppliers and partners for external use	7.5%	33.9%
Authenticating employees	18.2%	26.5%
To secure Web servers using SSL	20%	27.7%

Source: IDC Australia

Act 1998 and laid the foundation for the Electronic Transactions (Victoria) Act 2000, which established rules about acceptability of digital certificates in the broader private sector. In its wake, a growing number of contracts are now being signed using digital certificates — an executive of one PKI supplier even used them to sign his marriage certificate.

Improving PKI's commercial image

Clear government policies supporting digital signatures and the growing momentum of the Gatekeeper movement have been central to positioning PKI as an enabler for ebusiness initiatives moving business transactions online. But will the private sector buy it?

The answer seems to be 'yes, but slowly', if current projects are any indica-

done business on paper for hundreds of years, and there aren't many people who really have their head around what moving it all online involves."

One certificate for all

Gatekeeper is aiming to speed up adoption of digital certificates among companies doing business with the government. However, private-sector PKI also got a shot in the arm recently with the Australian introduction of certificates from Identrus, a global CA that is supported by 42 of the world's largest banks.

In Australia, the Big Four banks are working with Identrus to build a unified CA. Trusted by all manner of businesses and individuals, banks act as RAs to bring their customers into the global Identrus framework. Codenamed 'Project Angus', the local consortium is spearheading a push to build bridges between Identrus

and Gatekeeper and, in the process, to create a common ground for government and private-sector PKI. In March the government announced that Identrus-based Project Angus certificates will be accepted as ABN-DSC certificates. This will allow Australian businesses to interact with government agencies (through the ABN-DSC's role within Gatekeeper) and companies around the world (through Identrus's global CA network). This interoperability should complete the common framework for B2B transactions in Australia and around the world, increasing Australia's B2B capabilities.

According to Mike Jeffries, Baltimore's APAC product marketing manager for PKI, "Identrus and Gatekeeper are gradually bringing together the government sector and the private B2B sector. Up until the last couple of years, PKI has been closed user group based. But now there's a national and international infrastructure, it is easier to start embracing it in a big way." ■

Java's still on the job

Despite a decline in IT hiring, Java remains a key employment skill for developers.

The air of gloom surrounding dot com businesses and IT companies has spread to developers, who are also beginning to experience employment uncertainty. Just a year ago, most skilled IT workers could name their price and choose their employer, but recent indications suggest that the glory days could be over.

An Information Technology Association of America study released in April predicted that 44% fewer IT-related jobs would be created in 2001 than in the previous year. An index of IT job advertisements compiled by the Department of Employment, Workplace Relations and Small Business found that the number of advertised jobs has been in decline since November 2000.

However, there is still some way to go before no vacancies are advertised, and it seems that demand for workers with appropriate skills remains reasonably high. According to a recent study by research firm Gartner, experience with Java, the cross-platform enterprise developed by Sun, remains essential for IT professionals seeking employment in the corporate sector.

Of the 400 IT professionals Gartner surveyed, 80% reported that Java was being used in their organisation. An estimated 75% of new ebusiness applications will be developed using the platform.

A lack of qualified staff was identified by 71% of respondents as the main problem related to deploying Java applications within their businesses, and 62% predicted that this would still be the case two years from now. "Demand for Java is derived from massive business-to-business applications that will thrive long into the next decade," Gartner concluded.

This conclusion is endorsed by the software development industry and recruitment firms. "Java is really firmly cementing itself as the development environment of choice," Greg Wright, a systems engineer for Borland Australia, said. Wright oversees the company's training courses for JBuilder, its Java development environment, as well as other development products such as Delphi.

Microsoft has made several attempts to displace Java's pre-eminence, most recently with C# (see APC June, page 26). However, the challenge doesn't appear to have made much difference at the enterprise level yet. According to Wright, interest in Java

remains high in large corporations. They have made many expensive deployments of Unix technologies and want applications that translate readily from those systems to Windows desktops and, increasingly, to the Web. "If you're looking to cement yourself in the industry, you won't do yourself any favours by just learning Microsoft's platforms," he said.

Wright believes that the growing recognition that Java is best used at the server level for data and network-intensive applications, rather than just as a means of deploying front ends, has also contributed to its acceptance. "We've started using Java differently, recognising its strengths," he said. Other changes in approach include a greater use of Java on high-speed company intranets, instead of on the Web, where low bandwidth can still cause applications to run slowly.

Employment agencies are also experiencing an ongoing demand for Java application development. "Java skills are still one of the hot areas," Peter Johns, managing director for Spherion Recruitment, said. "In the short to medium term, there's no issue with the attractiveness of Java knowledge." Johns said that Java was particularly useful when combined with knowledge of another major enterprise technology. For example, Oracle financial and general Unix applications are useful backup skills.

However, technical skills alone won't enable you to advance to better positions in competitive environments. "People need to have experience in a good development platform, but they also need to be able to demonstrate the attitude that they can make a difference to the business," Johns said. "Organisations are not only looking to hire a technical skill, but also some business acumen."

The notion that IT workers also need business savvy has been popular for some years, but the growing competition for high-level jobs is likely to see even greater emphasis placed on this principle. Existing IT workers also face competition from newly trained staff who may be willing to work for lower salaries, but have been exposed to relevant technologies earlier in their training cycle. Some companies foster this early exposure through student discounts. For example, Borland utilises discount pricing for university students as

a means of giving them early exposure to JBuilder, Wright said.

Commercial training providers are beginning to combine Java training with a more general approach to development. "Employers want employees with specific Java skills, but they also want general programming knowledge and human interaction skills," Miki Yoneyama, marketing manager for Spherion's training division, said. In keeping with this view, Spherion's Java training module devotes 50 hours of its 210-hour Java elective to generalised programming concepts that can be applied in any object-oriented environment.

If this balance of skills is achieved, a solid career path is available. Positions requiring Java-specific knowledge are routinely advertised at \$75,000 per annum and up. "Specialised careers like those of IT professionals usually fare well, even during tough economic times," Gartner analyst Robin Flatau-Reynoso noted. "Java is a great skill to have in the IT professional's portfolio over the next five to 10 years," Johns agrees. "It's obviously tightened up a lot, but IT is still a very positive marketplace."

Angus Kidman



A guiding hand

As the hands-on section of APC, Workshop's main aim is to help you get more from your computer by providing you with detailed and accurate advice. With that goal in mind, this month we introduce a new section that will appear periodically to help you get the most from the software featured on our cover CDs. Turn to page 152 for our tutorial on Cloudscape, a Java-based development environment. A full working version is included on this month's cover CDs. Look out for more tutorials and overviews in upcoming issues, along with some great value software.

The connection between Workshop and the cover CDs doesn't stop there; make sure to check out our detailed shareware reviews as well. They provide you with easy access to useful tools, whether you're running Windows, Mac OS or Linux. Remember that the shareware titles you see reviewed in the pages of the magazine represent just a fraction of the software on the CDs each month.

The popular OS/2 column returns to the CD this month, with a double helping of advice and some handy new utilities.



Other CD bonuses this month include SaveLayout (discussed in our Windows column on page 138) and the AudioCD and Volume docklings (examined in the Mac OS column, page 144, which covers making the switch to Mac OS X).

Workshop provides advice for computer owners at all levels of technical expertise. New users can familiarise themselves with some of the security measures used to protect online music from piracy in our 5 Minute Guides, or learn about motherboard connectors in Step by Step. If you're a more advanced Workshop reader, you may want to try our introduction to Windows scripting, experiment with CVS under Linux, or just continue to extend their Java or C++ programming skills.

Archives of all Workshop columns can be found on the APC Web site at apcmag.com. We also welcome suggestions for improvements or additions to Workshop. Please use the feedback form on our Web site, email us at apc@acptech.net, or send snail mail to: APC Workshop, PO Box 4088, Sydney NSW 1028.

Bug of the month

We're probably not breaking new ground by saying that the Microsoft Office paper clip (Clippy) is a little unpopular. However, after crashing Windows Me, this month's bug enthusiast, Caesar Wong, found that Clippy looked a little more interesting than usual. Now, we're not suggesting that Clippy had been consuming pharmaceuticals, but it is rumoured that he's been banned from the Wests Tigers Leagues Club, as well as dumped from Office XP.

Win! Win! Win!

Workshop is always on the lookout for the strangest, funniest, most interesting or downright weird software bugs. These include code snippets, features that function poorly, or things

that crash a particular application. Anything and everything buggy deserves a mention.

Send us your favourite bug via email to bugs@acptech.net or snail mail to APC Bug of the month, PO Box 4088, Sydney NSW 1028, and you'll be in the running to win a software prize. Please send screen captures, example code listings or detailed instructions for triggering a bug in an application, as appropriate for your entry.

The winner's name, along with details of the bug, will appear in this column in APC August. So start hunting!



Contents

This month in Workshop

Our 5 Minute Guides have a look at the prevention of music piracy on the Web using fingerprints and watermarks, plus an explanation of IP spoof attacks. 126

This month's Bibliofile reviews books on ebusiness, Web design and image manipulation. 130

Step by Step continues its exploration of connectors with a look at motherboard connectors. 132

Learn how to automate tasks in Windows 2000 with Windows Script Host, and discover how to manage an unruly Windows 98 desktop in our Windows 98 column. 136

Continue learning about revision control systems in Linux with a look at the Concurrent Versions System. 140

Discover some not too well-known uses for the Internet on your handheld in PDAs. 142

In our Mac OS column, discover some tips to make upgrading to Mac OS X easy. 144

Practical C++ deals with platform and standardisation problems with binary files. 146

Practical Java shows you how to build new abstract data types with inheritance. 148

Insite demonstrates integrating dynamic content into a static Flash movie. 150

We have a special tutorial on Cloudscape, a Java-based development environment of which you can find a full copy on our cover CDs. 152

Michael Smith

Will new technologies help stem music piracy on the Internet?

Watermarks and fingerprints

What are digital watermarking and fingerprinting systems?

From the music industry's point of view, one of the main problems with MP3 as a music distribution mechanism is that there's no way of accurately identifying a file. If I make an MP3 file of one of my favourite tracks and send it to 10 of my friends, there's nothing in the file to indicate that I'm the source of the copy. Even if I purchased the MP3 file legitimately from an online service, there's nothing to indicate that I've done so (or to prevent my friends from accessing the same file if I send it to them).

Digital watermarking and fingerprinting systems aim to eliminate this problem by adding extra data to a file to provide information such as who the file originated from and who 'owns' it (if it's been purchased). This isn't just a case of appending extra data to the beginning or end of a file; encryption systems are generally used, otherwise it would be easy for music pirates to remove the relevant data and redistribute the files. The sound of the music shouldn't be altered by the extra data when it's played back.

What's the difference between a fingerprint and a watermark?

The terms 'watermark' and 'fingerprint' are often used as if they are interchangeable, but strictly speaking, this isn't the case. A 'fingerprint' (like its original on the human body) refers to the unique properties that identify a particular file. In the case of a music file, it often consists of the unique waveforms associated with a particular recording (as shown in the picture above). Specialised software can identify a song by examining its 'fingerprint' in this way; such a system has been used by Broadcast Data Systems in the US since 1990 to track which radio stations are playing particular songs.

Watermarking involves adding extra data to a file to identify and protect it, in a similar fashion to watermarks used on paper, or the TV station ID watermarks that appear in one corner of the screen.

Watermarking is usually essential to mark ownership information on a song, while fingerprinting techniques are useful for identifying whether a particular file contains a particular song. Often, the two technologies are used in parallel, and this has led to the two notions being equated.

Are watermarking technologies already being used?

Indeed they are. Probably the most visible example for many desktop users is the Windows Media Format developed by Microsoft. This allows content distributors

when the SDMI group staged a challenge to hackers to see if they could remove watermarks from a series of SDMI files. One group of researchers claimed to have removed all four watermarks, but declined to enter the competition properly, as they wanted to publish their results. Subsequent attempts to do so have met with threats of legal action from SDMI.

Why is Napster getting involved with a fingerprinting system if it only uses MP3 files?

In April, Napster announced a deal with Relatable to use the latter's fingerprinting system to help Napster to identify files being distributed across its network. This was part of Napster's attempts to comply with a court order under which it must block distribution of copyrighted files identified by major record companies. Many Napster users have thwarted those attempts by changing or altering filenames so they can't be detected readily. If it were implemented fully, the Relatable system would allow Napster to identify copyrighted files even if the names are changed, as the audio data would remain constant. Napster began using the Relatable system in May.

How hard is it to beat these kinds of systems?

Not very hard at all. Determined pirates can always take a file that has been encoded in a system such as Windows Media, play it back on their systems, and then record the audio output that results on a separate system. There may be a minor loss of quality, but with decent cabling and recording equipment, few people are likely to notice the difference, especially if the music is re-encoded in a format such as MP3. It seems unlikely that a system will ever be developed that can eliminate this form of piracy, since human hearing is unlikely to include widespread support for encryption technologies in the near future.

Angus Kidman



▲ The unique waveforms associated with a particular recording

to encode their files securely, so that the files are only playable for a given period after downloading. Windows Media has proved popular with record companies that want to distribute advance promotional copies of music, but it hasn't taken off to the same extent as MP3s, in part because it's not accessible to non-Windows users.

Liquid Audio, which provides a range of similar facilities and also allows files to be easily burned to CD, has been around for even longer and has been adopted by a number of other online retailers as their chief format for selling files. Despite this, it is still much less popular than standard MP3 files.

Perhaps the most infamous attempt at a watermarking system is the Secure Digital Music Initiative (SDMI), which is being developed by the five dominant global record companies. SDMI is yet to debut as a commercial system, but it achieved infamy

Viewmaster™

A Screen More than Just Flat



F7EAT

Viewmaster 17" Flat Screen Monitor

The Viewmaster F7EAT flat screen monitor with no corner distortion on full-scan display has ultra-high resolution and all functions controlled by an on screen display. The advanced DDC1/DDC2B I/O port provides a convenient plug and play feature for Window 9X/2000 systems.



L5CDS

Viewmaster L5CDS LCD Monitor

The Viewmaster L5CDS LCD monitor provides crisp, flicker free, high contrast images using tearless frame rate conversion accepting a wide range of frame rate frequencies to provide perfect moving pictures. 1024 x 768 resolution at 16 million colors. This product is specifically suited for financial, medical and logistic business applications with a significantly reduced footprint, negligible radiation, low power consumption, high-resolution capabilities and superior image quality to deliver the most comfortable display.

Proudly Distributed By



Melbourne
Sydney
Adelaide
Darwin
Perth

ph: (03) 9540 8555
ph: (02) 9748 8811
ph: (08) 8340 3740
ph: (08) 8948 4451
ph: (08) 9477 5440

fax: (03) 9540 8989
fax: (02) 9748 8866
fax: (08) 8340 3745
fax: (08) 8948 4450
fax: (08) 9477 5450

www.hallmark.com.au sales@hallmark.com.au

3 years on site monitor warranty (excluding LCD monitor);
conditions apply Melbourne, Sydney & Adelaide metro only.



Quality
Endorsed
Company
ISO 9001:2000
Standard Australia
Melbourne & Adelaide

How does an IP spoofing attack work?

Fiddler on the spooof

In its recent report on the feasibility of banning interactive gambling, the National Office for the Information Economy (NOIE) identified one potential method of circumventing a ban: IP spoofing. This brought a previously highly specialised networking topic to the attention of the general public, and resulted in several calls to APC from other media organisations, asking for an explanation of how it worked. IP spoofing has hit the big time.

How does IP spoofing work?

This is a very simplified explanation. To make things easier to follow, the servers involved are allocated names.

- **Victim** is the server to be attacked.
- **Friend** is a server that Victim already has a trust relationship with.
- **Attacker** is the server making the attack.

The basic aim of an IP spoofing attack is to pretend to send data from a trusted IP address (the Friend server) that really originates from a different address (the Attacker server). If Victim's security settings are such that a trusted relationship can be authenticated purely through an IP address, a spoofing attack gives Attacker complete access to the Victim server.

An IP spoofing attack isn't possible if the Victim and Friend servers don't have a trust relationship that allows address-based authentication. However, these relationships aren't uncommon. Administrators often create these connections between servers they're responsible for, allowing them to log in to one from the other without requiring a password. Attacker needs to know that this relationship exists, but there are a number of ways of determining this (including testing IP addresses that are similar to the Victim server's to see if they are separate, trusted systems).

The stages of IP spoofing

1. **Friend** is disabled by **Attacker**.
2. **Attacker** sends message to **Victim**, pretending to be **Friend**.
3. **Victim** sends response to **Friend**, but it never arrives, as **Friend** is disabled.
4. **Attacker**, masquerading as **Friend**, sends acknowledgement of response, while creating authenticated connection.

How does the attack begin?

After a Victim and Friend server have been selected, the next step is to disable the Friend server. Otherwise, when Attacker assumes the identity (and IP address) of Friend and begins sending messages, Victim's responses will end up at Friend, foiling the whole plan.

A common method of disabling the Friend server is to flood it with request packets from a spurious IP address, preventing it from responding to legitimate requests. Once this is done, Attacker sends a message to the Victim server that purports to come



from the Friend IP address. Victim then sends a message back to the Friend IP address, which needs to be responded to correctly to authenticate the connection.

But Attacker won't receive the response from Victim, as it doesn't actually own the IP address of Friend.

Well spotted. To complete a fake request successfully, Attacker also needs to discover the sequence numbers (used in TCP/IP to track and authenticate received packets) being used by the Victim server. As messages sent to the disabled Friend server (containing the correct sequence number) will be discarded, Attacker must calculate the next sequence number being sent from Victim. Then it can send back an acknowledgement message that will be accepted as coming from Friend.

Finding the sequence number can be achieved by sending a number of legitimate requests (usually to a publicly accessible port such as that used for mail), and noting the sequence numbers received. Attacker must then calculate how quickly Victim is rotating through sequence numbers, which increase with each message sent out, as well as incrementing automatically every second by a given value which varies depending on the OS being used. There are also specialised hacking tools that can assist in determining the sequence number.

If the sequence number is guessed correctly and a trust relationship does exist, the Attacker is authenticated on to the Victim server. The Attacker often establishes its own, hidden login on the server, giving it future access without needing to stage a second IP spoofing attack.

Couldn't this easily go wrong?

There are several vulnerable stages in a spoofing attack. The most obvious is in guessing the sequence number; if this is wrong, then the entire process fails. Failure to fully disable the Friend server can also present problems. However, the fact that IP spoofing continues to be used demonstrates that it is possible. Some anti-spoofing measures focus on making it impossible to guess the sequence number, but a simpler solution is to ban all authentication based solely on IP address, and force all logons to use passwords and other security systems.

Why would anyone would go to all this trouble just to gamble online?

In its report to the NOIE, local consultancy Com Tech noted that IP spoofing was "highly sophisticated" and predicted that in the immediate future, "IP spoofing will remain an option for crackers and other technically proficient users only". Indeed, as IP spoofing on its own won't 'conceal' the address of someone who is surfing the Web, the most likely application would be in using the methods described to create their own account on a gambling company's server. This still seems rather complicated, compared to the alternative of simply logging in to an overseas site.

Angus Kidman

MicroGram Computers

www.mgram.com.au

Networked and Wireless

Here's just some examples of how you can tap into this great system...

Scenario 1: Set up a LAN of wireless networked PC's. Connect notebooks and/or PC's in difficult to wire environments such as historic buildings or frequently changing environments in retail shops, etc.

Scenario 2: Provide access to corporate facilities such as email and data bases for mobile workers e.g. doctors and sales staff.

Scenario 3: LAN interconnection for point-to-point link e.g. building to building.

- Cat. 11339-1 Access Point **\$1283**
 Cat. 11349-1 W/less LAN Acc. Point - Bridge **\$1349**
 Cat. 11340-1 PCMCIA Station Adapter - Internal Antenna **\$544**
 Cat. 11343-1 PCMCIA Station Adapter - External Antenna **\$598**
 Cat. 11344-1 PCMCIA to PCI Adapter **\$98**
 Cat. 11351-1 Directional Antenna **\$219**



Bar Code Portable Laser Data Collector

Count your stock or collect remote data with this portable laser bar-code scanner. It is unbelievably small, about the size of a Nokia 5110, and the laser scanner is fast and accurate. It is easily programmed with a built-in program generator or the Windows based task generator. An LCD display provides the user interface along with a 26 key keypad. Uploading is via an RS232 connected cradle or an infrared link. To top it off, it has a Lithium Ion Battery so that problems associated with memory effects are largely overcome. Battery charging is automatic when placed in the cradle. price includes the data collector, cradle, & programming software.

- Cat. 8946-1 Portable Laser Data Collector **\$2280**
 Also our keyboard wedge & serial CCD scanners
 Cat. 8916-1 KB Wedge AT-PS/2 **\$243**
 Cat. 8919-1 Long Range CCD Scanner **\$443**



USB to USB Network Cables

These USB-USB Network Bridge Cables provide a quick and easy solution to networking up to 17 USB computers with hot Plug & Play technology without adding any Network Interface Cards, or instantly transfer files using "Norton Commander" type software (PC-Linq) via a split window system with the Interlink USB cable.

- Cat. 9125-1 USB Network up to 17 USB computers **\$87**
 Cat. 9107-1 USB PC to PC Interlink **\$66**

Printer Servers

Now you can avoid slowing down a work station when a print job is running by installing these small printer servers. Printer Servers essentially replace networked PCs used to service print jobs.

- Cat. 11352-1 Single Parallel Port 10/100Mb **\$338**
 Cat. 11293-1 3 Parallel Port 10/100Mb **\$358**

Multi-PC Controllers

Save time, space and money by using one keyboard, monitor and mouse to control up to sixteen PCs. Our Multi-PC Controllers are available to control 2, 4, 8 or 16 PCs & operate in DOS, Win 3.x/9x/ME/NT/2000, Netware UNIX and Linux environments. PC selection is via a push button or keyboard hot keys.

- Cat. 11654-1 2 way PS/2 **\$199**
 Cat. 11655-1 4 way PS/2 **\$389**
 Cat. 11656-1 8 way PS/2 **\$949**
 Cat. 11657-1 16 way PS/2 **\$1299**



TERMINALS

Text Terminals

Replace your aging terminals or install new systems using industry standard monitors and keyboards. Our terminals emulate a wide range of industry terminals, including WY-120/60, 325, 50+; TV1910+ / 925, ADDS A2, PC TERM, PCG ALPHA, VT52, 100, 220; and Console ANSI. Standard VGA monitors and keyboards plug straight into the back of the terminals. The terminals are available with either a serial connection or an ethernet connection.

- Cat. 1133-1 Terminal 460K Serial **\$549**
 Cat. 1134-1 Terminal TCP/IP Ethernet **\$579**

Windows Based Terminal

Save on your system & support costs and considerably enhance your security. On a Windows Based Terminal system, all the processing is done on the server, the terminal only receives screen updates. There are no floppy drives or PC operating systems to corrupt. Simply connect over your ethernet network, via modem or even over the internet. The terminals support Microsoft's RDP and Citrix ICA protocols, in addition to emulating a number of standard terminals (VT100 etc).

- Cat. 1214-1 Terminal Windows Based **\$1069**



THIS MONTH'S SPECIAL

Video editing made easy!

Connect your digital video camera to your PC, download your video to the hard drive then kick in the Ulead Video Studio DV SE editing software provided. Follow the time line, edit your video, add transitions, etc... When finished simply write back to the tape. It's easy, effective & best of all...no loss of quality!

Cat. 2621-1 Firewire Card & Software

NORMALLY \$239
THIS MONTH ONLY \$209

While stocks last



Surveillance Cards

A PCI PnP card with four composite video inputs. It has Win95 & Win 98 drivers & is bundled with Multi-cam Remote Viewer, Digital Surveillance System & Backup System software. Features include:

- Zoom-in / Zoom-out function
- Brightness, Contrast, Saturation, Hue controls
- Programmable multiple detection zones for each camera.
- Motion-Detection and Recording / Storage of Video Data / Communication.
- Multiple Alarm Triggering mode.
 - Alarm from speaker.
 - Alert message call to your pager or phone call.

- Cat. 3429-1 4 Camera Input **\$1280**
 Cat. 3466-1 8 Camera Input **\$2440**
 Cat. 3448-1 12 Camera Input **\$3480**
 Cat. 3449-1 16 Camera Input **\$4399**

Hard Drive Controllers

Ultra DMA100 IDE controllers are available as standard or RAID. Will co-reside with up to 4 additional onboard IDE devices!

- Cat. 2827-1 Ultra DMA100 **\$129**
 Cat. 2848-1 Ultra DMA100 RAID **\$154**



TRAIN YOURSELF ONLINE

from a low
\$1595
 per month



New courses now on line - SAP R/3, WIN2000 MCSE, RPG, Web design, CCDA LAN/WAN, e Commerce.

www.tol.com.au

Training Online

Phone: 02 4389 8800 email: info@tol.com.au

We welcome Bankcard, Mastercard and VISA
NO SURCHARGE!

Phone: (02) 4389 8444
sales@mgram.com.au
info@mgram.com.au
 FreeFax: 1 800 625 777

Australia wide
 express courier
 \$12 (3kg max)

MicroGram Computers

Dealer
 Enquiries
 Welcome!

Unit 1, 14 Bon Mace Close,
 Berkeley Vale NSW 2261
 Vamtest Pty Ltd trading as

MicroGram Computers ABN 60 003 062 100.

All prices subject to change without notice. MGRM0701-1

Work and play

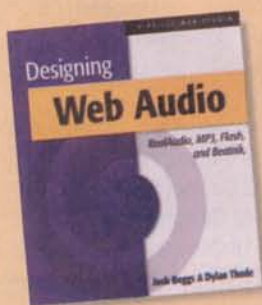
Be creative with Web design and image manipulation, and pick up tips for your ebusiness or IT department.

Designing Web Audio

Web audio is still a very undeveloped field. This book, written by two sound design professionals, provides a detailed account of how to incorporate four major sound technologies into your Web site: RealAudio, Flash/Shockwave, Beatnik and MP3.

Few novice Web designers would consider audio add-ons, and the authors assume that readers have some familiarity with raw HTML and JavaScript, providing dozens of examples from a companion site. Numerous case studies also add to the book's depth.

All four technologies are examined in detail, but RealAudio receives the best coverage. The discussion of MP3 is rather



perfunctory, but as the authors note, the ability to manipulate MP3 in interactive sites is still very limited.

The in-depth instructions on how to capture decent audio samples are particularly welcome. There's also a lengthy chapter early on in the book that is dedicated to improving the sound quality in files, and an appendix shows you how you can build your own recording studio on a budget.

This book will be an invaluable guide for anyone planning to add audio to their Web site, whether it's in the form of streaming training materials or simple button effects. However, it is expensive.

Angus Kidman

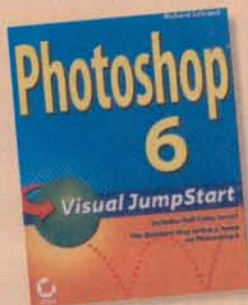
Author Josh Beggs and Dylan Thede
Publisher O'Reilly
Contact Woodslane
Phone (02) 9970 5111
Price \$71.50
ISBN 1565923537
Rating ■■■■■■■■

Photoshop 6 Visual JumpStart

This book provides a graphical introduction to the popular graphics editing software, Photoshop 6. Aimed at people new to graphics editing, *Visual JumpStart* provides step-by-step guides for tasks including setting up Photoshop's preferences, adjusting or modifying images, using layers and filters, and posting images on the Web.

Clear, concise language and large type provide instructions that are accurate and easy to follow. Each step also has a series of pictures or diagrams showing details such as how to access the options, clip out various parts of the image, and create effects.

The screenshots have been taken using Macintosh software. This may initially con-



fuse people using Windows, but, keystrokes for both platforms are provided.

It is always good to be able to use the same images as those in the text, and all images worked on in *Visual JumpStart* can be downloaded from the publisher's Web site. This is a sensible move, as it's not too much trouble to download each image, and including a CD-ROM would only have increased the price.

Photoshop 6 Visual JumpStart is a well-written guide for people unfamiliar with image editing software. Its attractive price and reasonably extensive subject matter, make it highly recommended.

Alan Crawford

Author Richard Schrand
Publisher Sybex
Contact Woodslane
Phone (02) 9970 5111
Price \$39.95
ISBN 0782128661
Rating ■■■■■■■■

e-business @ work

How refreshing to find an Australian overview of how Internet technologies can be applied to business. The book is aimed at people with an interest in understanding the framework of ebusiness who want to plan online strategies for their own businesses.

This book is ideal if you have little understanding of the topic, and it assumes no prior technical knowledge. It covers many aspects of ebusiness, and an excellent appendix provides an introduction to negotiating the Web. This is particularly useful for small business owners starting from scratch.

An abundance of case studies and examples of predominantly Australian



sites, together with useful screenshots, help to show how the theory applies to real-world situations.

The three authors have different relevant backgrounds, and their breadth of experience is reflected in the book's content. All have been involved in ebusiness and online learning and training.

Don't expect to have acquired all the skills you need to build a successful online enterprise after reading this book — that's not its purpose. However, if you want more control of and knowledge about this new business paradigm, then this is the perfect tool for you.

Cathie Kennedy

Authors Pauline Farrell, Elizabeth Bradbury and Juliana Durovic
Publisher Prentice Hall
Contact Pearson Education
Phone (02) 9948 5799
Price \$34.95
ISBN 01740093135
Rating ■■■■■■■■



For a complete archive of Bibliofile columns, visit apcmag.com.

The I.T. Industry ^{still} Wants You...



Do you want a better job?

The demand for skilled IT staff is still outstripping supply.

Job prospects for IT professionals are still nearly double the national average.

Getting "Certified" is your ticket to an exciting IT career. Industry specific certifications such as Microsoft Office User Specialist (MOUS), Microsoft Certified Professional (MCP), Microsoft Certified Systems Engineer (MCSE), Certified Novell Engineer (CNE), A+ , Network+, I-Net+, Certified Internet Webmaster(CIW) and Certified Cisco Network Administrator (CCNA) represent advanced levels of attainment that are highly sought after both in Australia and overseas.

Your Options

Get trained and get going - it's that simple! But which training method is going to be best for you? Training from a book can work if you're already an expert and just looking to fill the gaps before you sit the exams.

Going to seminars? There's a lot of information to try and absorb at once. Instructors often assume you have a good understanding of the subject before you even start - then there's the time out of work, not to mention the cost.

What about self-paced training programs? Overwhelmingly the preferred method of preparing for certification exams according to MCP (Microsoft Certified Professional)

Magazine.

With LearnKey you study at your own pace, at your own place and in your own time. LearnKey is affordable and you now get 24/7 one-on-one support.

LearnKey Training Rated Best in the Industry

Self-paced training means you can study in your own time and at your own speed. No need to quit work and take up study full-time

- you control the schedule. With LearnKey you get repeatable training, round the clock mentoring and help from eSupport - you are assigned to a personal tutor whose job is to help you get certified!

Each LearnKey training kit consists of four components:

Training Guides - comprehensive industry-recognised reference/study books.

Interactive Training CD-ROMs - an expert tutor leads you through a comprehensive overview of the course. The CD-ROMs utilise simulated software exercises and challenges to ensure you fully understand each concept covered.

MasterExams - simulated practice exams containing hundreds of questions that will assess your readiness to sit the real exam.

eSupport - access to your own personal online tutor. eSupport provides further resources and helps bridge the gap between 'theory' and the 'real world'.

.So if you're serious about investing in your future there's no better way than LearnKey.

We have a course to meet your career needs that will fit your budget

Enhance Your Career - Now

Vendor Certification is your passport to the hottest careers on offer.

Remember, vendor certifications are recognised internationally. You'll receive peer recognition and IT industry status.

LearnKey recognise that time and money can

be limiting factors when it comes to getting qualified but if you are going to invest in something it is smart to invest in yourself. LearnKey can help you realise your potential.

LearnKey has the solution. Request our free information pack and discover how we can help.

IT JOBS GROWTH

The Morgan and Banks Job Index Survey found that 59.1% of employers are planning to hire IT staff during 3 months to April 30th and the trend will continue. MBT director Ian James said "Don't believe all the doom and gloom demand is still outstripping supply".

APC Magazine April 2001

eSupport

It's like having a personal trainer at your disposal 24 hours a day 7 days a week!

"eSupport gives trainees using our self-paced course materials the added confidence of access to a personal tutor and a website that keeps them informed of the latest developments in certification - significantly enhancing their study process" says Managing Director, Robert Gordon.

PEACE OF MIND
Reference guide



YES, Please contact me to discuss my training needs and organise for a FREE DEMO CD-ROM.

Full name:

Business:

Address:

P/code:

Telephone:

Email:

1-800-229933

or fax (07) 3841-2618

info@inlearning.com.au

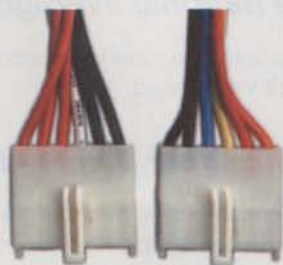


What are the dos and don'ts of connecting
to your motherboard?

Making connections

Last month, Step by Step looked at drive connectors. This month, the focus is on the other end of the cable. Find out the correct way to connect to your PC motherboard and where things can go wrong.

Motherboard sockets for IDE and floppy connectors are keyed, so the cable can't be plugged in backwards. The two types of connectors are easy to tell apart because IDE connectors have 40 pins and floppy connectors have 34 pins.



▲ Two-part AT motherboard power connector

The above image shows the correct plug arrangement for an old-style, two-part AT motherboard power connector, with black wires towards the middle. The two connectors are keyed, but they can still be swapped so that the black wires are on the outside. This can cause serious damage to the power supply unit, the motherboard, or both.

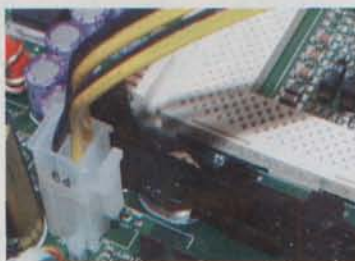
Newer boards

Fortunately, modern ATX computers have a more sensible single power connector, which is properly keyed and easy to click into place. Remember to press the latch if you want to release it.



▲ A modern ATX motherboard power connector

The Pentium 4 has given rise to another motherboard power connector. The ATX-12V cable and socket provides extra 12-volt



▲ The ATX12V cable and socket

power to demanding boards. It's keyed and easy to deal with, provided you have something to plug into the socket.

Only ATX12V-compliant PSUs have the appropriate connector. If your PSU doesn't, you can use an ordinary four-pin power connector with a cheap adaptor cable, as long as the total system power demand doesn't exceed your PSU's capabilities.

Most motherboards don't have an ATX-12V socket. Some Pentium 4 boards work without the ATX12V cable connected, but if you add lots of expansion cards, you could encounter problems.

Bits and pieces

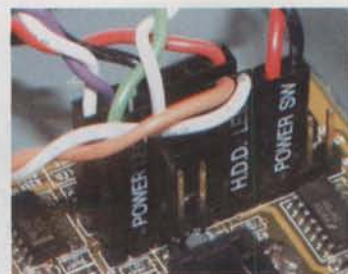
All current consumer motherboards have at least a couple of the three-pin connectors shown in the picture below. Speed-reporting three-wire 12-volt fans can be connected to these. The third wire allows the motherboard to monitor the speed of the fan and sound an alarm if it drops below a preset limit. Some motherboards don't allow you to power the computer up if there's no fan connected to the CPU FAN socket.



▲ Three-pin connectors

The fan connectors are keyed and easy to use. Problems only arise if you don't have enough of them. If you have a three-wire fan, but no connector for it, you can plug it into a normal PSU power connector with a cheap adaptor. You can also use plain two-wire fans on three-pin connectors, if they

have the right plug, or if you use another cheap adaptor. You can't monitor the fan speed, but the fan will run fine.



▲ Connectors for the case lights and switches

The fiddliest motherboard connectors are the ones for the case lights and switches. They're not keyed, and they all plug into one little cluster of pins on the motherboard.

Working out which connector hooks up to which part of this pin cluster can be tricky, especially if the motherboard is buried inside a case. The motherboard manual will tell you, and many motherboards have the ID information printed in tiny type next to the pin block, but this still doesn't make it easy for novices.



▲ The pin cluster for the case lights and switches

Modern ATX-standard cases have separate wire pairs for the power and reset switches, the power and drive LEDs, and the speaker. The switch and speaker connectors can be hooked up either way around. The LEDs won't be harmed if you connect them backwards, but they won't light up.

In each wire pair, the coloured wire (not white or black) should indicate the positive side, and the positive pin of each corresponding part of the connector block should be indicated in the manual or on the board.

Of course, you can just guess which way to connect the LED leads; there's a 75% chance you'll get at least one of them right. If one or both lights don't work, just reverse the appropriate plug.

Daniel Rutter



For a complete archive of APC Step by Step columns, see apcmag.com.



Daniel Rutter can be contacted at dan@dansdata.com.

MSI

Global Reach ... !

Star Force 822



- 256-bit engine
- 200 MHz processor speed
- 64 MB DDR SDRAM memory, 460 MHz effective memory cycle
- 4x AGP Bus-System
- TV-Out/TV-In/DVI (optional)



Star Speed

MS-8212 DVD

- 256bit 2nd Generation Engine
- AGP 4X with Fast Write
- 500 MHz Memory Clock
- 64 MB DDR SGRAM
- TV-Out/TV-In/DVI (optional)

Slim PC



- Support Intel PIII Processor
- LAN, Video, Audio, Integrated
- Support IEEE1394 and TV-Out
- Support Case Intrusion Alarm Protection

MSI mainboards are the symbol of perfection and represent the success of MSI's ability to deliver cost-effective products that satisfy most applications and users' demands. They are outstanding products for today's Global computing.

MSI extended its range of products to include the new generation of graphic cards, CD-ROM, DVD, Slim PC and other multimedia and computer peripherals products.

If you are in it for the speed and robustness, don't miss out on this outstanding products from MSI. Go ahead! Enjoy ... !

NEW FEATURES FROM MSI

USB [PC2PC]* connection. Easy online access.

MSI proudly presents its latest feature - USB [pc2pc] connection. Users just need to own a MSI motherboard that supports this feature by using one USB cable.

It can easily conduct data transfer and back up, internet access, peripheral sharing, net meeting, ethernet emulation, home networking and mobile computing.

* Conditions apply. [PC2PC] connection is not included in all products. Please check before ordering.



D-Bracket™

New hardware diagnostic device - D-Bracket™

This single device makes finding and solving initial system problems extremely easy. All green lights mean you're ready to rock.

MS 694D Master-S



- Support Dual FC-PGA PIII Processor
- Support Dual channel Ultra 3 SCSI
- Support AGP Pro and 4DIMM Slot
- Support PCI2.2 and D-Led (Diagnostic LEDs)

MS 850 Pro



- Support Intel® P4 processor
- Support PC 400/700/800 RAMbus RAM
- Support FSB 400 MHz, RIMM x4 Slot, maximum 2GB
- Support AGP Pro
- Support Ultra DMA 100 and Audio integrated

MS K7 T266 Pro-R



- Support Athlon 200/266FSB processor
- Support AGP Pro and DDR SDRAM
- Support ATA100 and IDE RAID
- Support PCI 2.2 and D-Led (Diagnostic LEDs)

MS 815EP Pro-R



- Support Intel PIII up to 1GHz
- Support ATA100 and IDE RAID
- Support AGP Pro
- Support PCI2.2 and D-Led (Diagnostic LEDs)

MS K7T Turbo-R



- Support Athlon 200/266FSB processor
- Support 1AGP/3DIMM/6PCI slot
- Support ATA100 and IDE RAID
- Support PCI2.2 and D-Led (Diagnostic LEDs)

MSI
MICRO-STAR INTERNATIONAL
Link to the Future



For more information visit our website
MICRO-STAR INTERNATIONAL www.msi.com.tw
MSI COMPUTER AUSTRALIA PTY LTD www.msicomputer.com.au

© Micro-Star International 2001. All brand names are registered trademarks of their respective owners. These specifications are subject to change without notice.



NSW/ACT Tel (02) 9519 4600
VIC/TAS Tel (03) 9560 3388
QLD/NT Tel (07) 3357 4300

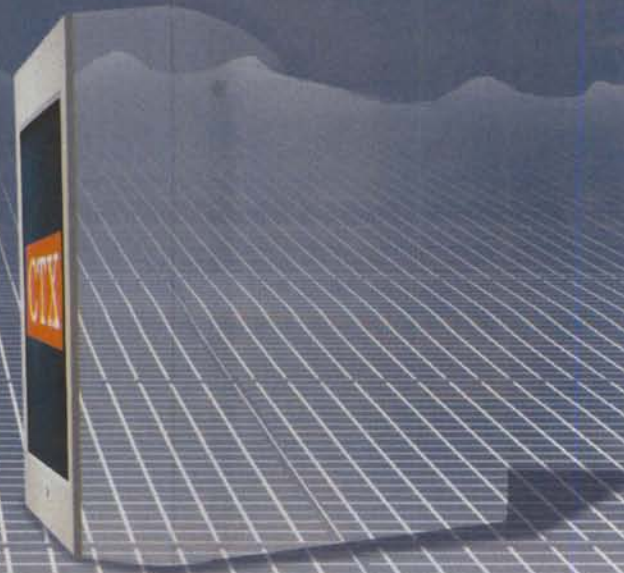


Tel 1300 65 3333
Fax 03 9545 3326

Tech Pacific
Leaders in Technology Distribution

QLD/WA/SA
Tel (02) 9381 6384 or 9381 6254
NSW/VIC
Tel (02) 9381 6270 or 9381 6273

Flat and sharp

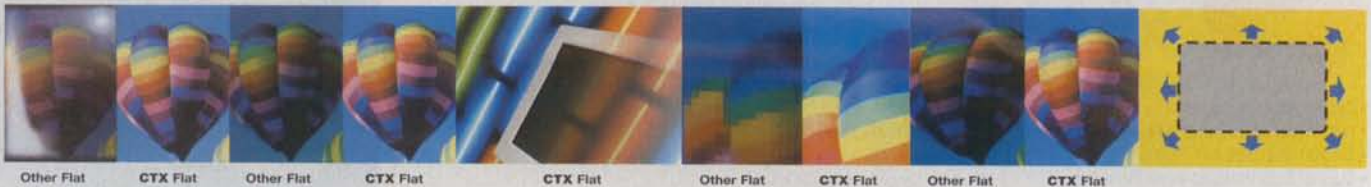


Still the best value, high performance monitor

- **Features 17inch super-flat FD Trinitron CRT**
- **Patented super-flat FD Trinitron CRT** produce saturated colours and crystalline images of the purest resolution. With uniform image size extended to every corner, the tubes are free from the distortion that characterised cylindrical and spherical screens.
- **Super-flat screen** minimises reflection and protects vision.
- **Built in USB HUB** expedites peripheral connections.
- **0.24mm super-fine pitch** ensures a super sharp image, provides excellent visual comfort and eliminates long-term viewing fatigue.
- **Extra-large viewable area** facilitates web surfing graphics
- **TCO99 compliant**, environmentally friendly design minimises radiation

Three Years Limited Nationwide Warranty

- Effectively reduces reflection
- Consistent colour and brightness
- 0.24mm dot pitch
- Super-fine resolution
- Distortion and concave-free image



**CTX PROFESSIONAL
FLAT SERIES**

NEWEST CTX MONITOR LINE

Exclusive distributor

Ocean Office Automation Pty. Ltd

www.ocean.aust.com

CTX and CTX Logo are registered trademarks of Chuntex Electronic Co. Ltd Trinitron® is registered trademark of Sony Corporation

Built for quality, performance and reliability



Solutions to fit your needs. Solutions to grow with your business. Established in 1992, Ocean Office Automation, the manufacturer of Octek PCs, continues to excel in providing IT solutions to businesses of all sizes. From a basic desktop PC to a fully configured network solution tailored to your needs. Whatever the needs, whatever the business, Ocean delivers ...

Desktop PCs

From basic office terminal to full multimedia capability and graphics applications.

Workstations

For intensive number crunching, CAD/CAM, graphics intensive applications and even the games fanatic!

Servers

Validated Intel White Box servers. From entry level with single processor to enterprise with quad processors and full redundancy.

INTEL® WHITE BOX SERVER

(Entry Level)

Intel® Pentium® III Processor 1GHz

- * Intel® L440GX+ Server Board
- Integrated Graphics
- Integrated Intel® Pro/100+ NIC
- Intel® Server Control
- Emergency Management Port
- System management Instrumentation
- * 256MB SDRAM with ECC
- * 2 x 9GB Ultra160 HDD
- * Octek Fulltower chassis with 300W PSU
- * Sony 52x CD-ROM Drive
- * Sony 1.44MB FDD
- * Microsoft Intellimouse
- * CTX 15" Monitor 1280 x 1024

\$3,690

or \$35 per week

GAMES SYSTEM

Intel® Pentium® 4 Processor 1.5GHz

- * Octek i850 Pentium® 4 mainboard w/on-brd sound
- * 128MB PC800 RDRAM
- * Quantum 30GB Ultra ATA/100 7,200rpm HDD
- * nVidia Geforce 32MB AGP Graphics w/TV out
- * Internal 56K Data/Fax/Modem
- * Sony 52x cd-rom Drive
- * Aureal Vortex2 SuperQuad Digital Soundcard with A3D
- * Altec Lansing ACS54 Speakers (Sub-woofer + 4 satellite speakers)
- * Medium Tower ATX chassis
- * Microsoft Internet keyboard
- * Microsoft Intellimouse
- * Microsoft Worksuite 2001
- * MS Windows 98 or Windows ME
- CTX 17" Monitor

\$3,390

or \$34 per week

PROFESSIONAL WORKSTATION

Intel® Pentium® 4 Processor 1.7GHz

- * Octek i850 Pentium® 4 mainboard w/on-board sound
- * 128MB PC800 RDRAM
- * Sony 1.44MB FDD
- * Quantum Ultra ATA/100 60GB 7,200rpm HDD
- * Sony 52x CD-ROM Drive
- * nVidia Geforce 32MB AGP Graphics w/TV out
- * Medium Tower chassis
- * Microsoft Internet keyboard
- * Microsoft Intellimouse
- * CTX 17" Flat Screen FD Trinitron Monitor
- * MS Windows 98 or Windows ME

\$3,790

or \$36 per week

OFFICE TERMINAL

Intel® Pentium® III Processor 1GHz

- * 128MB SDRAM
- * Quantum 20GB IDE HDD
- * Onboard Sound & Graphics
- * Sony 52x CD-ROM Drive
- * MicroATX chassis
- * Microsoft Internet keyboard
- * Microsoft Intellimouse
- * Microsoft Worksuite 2001
- * MS Windows 98 or Windows ME
- * CTX 17" Monitor

\$2,250

or \$23 per week

All prices quoted include GST



NEW TECHNOLOGY FOR THE NEW MILLENNIUM

For more information and custom-configurations, please call

1300 132 682

www.octek.com.au

Quality
Endorsed
Company

ISO 9002 Lic 6184
Standards Australia



Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation.

Familiarise yourself with
Windows Script Host.

Sticking to the script

Curious readers may already have dabbled in Windows Script Host (WSH), and many of you are probably using scripts to automate Windows 2000 tasks. So, what is WSH, and what can you do with it?

Scripting is a longstanding convention in Microsoft operating systems. In the good old days of DOS, batch files were used to create a script that executed tasks one after another. These were easy to create and use.

For a long time, it seemed that there would never be a similar scripting tool for Windows. However, the release of Windows 98 brought WSH with it. A version for Windows 95 was also made available for downloading shortly after Windows 98 was released. WSH is a standard feature in Windows 2000.

You won't find an icon for WSH in Administrative Tools or any other folder. WSH consists of two files: WSCRIPT.EXE (the Windows-based host) and CSCRIPT.EXE (the command line host). Scripts are run from within Windows by double-clicking the script file, and can be run from DOS by entering a command.

WSH provides scripting engines for Visual Basic Scripting Edition (VBScript) and JScript, and third-party engines are available for other scripting languages such as Perl and Rexx. The language used in batch files was the DOS command language, which is quite limited compared to VBScript and JScript. Nevertheless it is still supported by WSH.

Scripting languages such as VBScript and JScript are partial versions of their full-blown counterparts. This means that the programs you can develop with VBScript and JScript are much simpler and smaller than those you can develop with the full Visual Basic and Java languages (the latter provide far more flexibility).

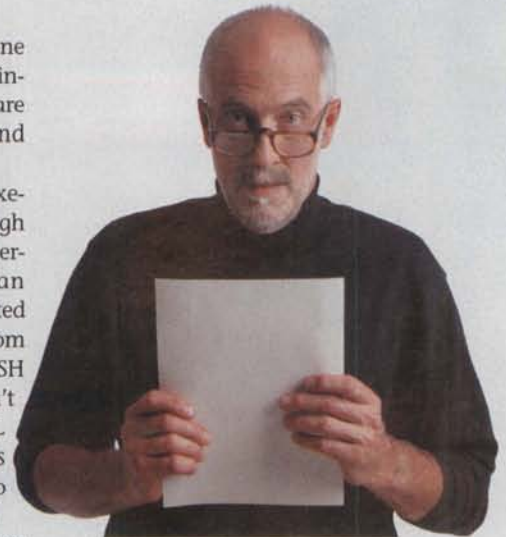
The scripting languages that run under WSH can perform numerous operations, but these scripts cannot function properly

without help from the host. WSH is just one of the hosts scripts can run under. In Windows 2000, scripting host capabilities are also provided by Internet Explorer and Internet Information Services (IIS).

Internet Explorer allows scripts to be executed from within HTML pages. Through Active Server Pages (ASP), IIS enables server-side scripting over the Internet or an intranet. With WSH, scripts can be executed directly from the Windows desktop or from a command console. One advantage WSH has over Internet Explorer is that you don't need to embed a script file in an HTML document to make it run. WSH requires far less memory than Internet Explorer, so it is also less of a burden on your system.

Without one of the three hosts, scripts cannot read or write to the disk, display anything on the monitor, or change the computer in any way. The host's job is to read the script, interpret the script's language and call the appropriate engine to execute the script's instructions. In addition, the host allows scripts to access the specific WSH objects so that they can accomplish their tasks. An object is a collection of methods (subroutines) and properties that are available to other programs. WSH has a collection of eight objects: WScript, WshArguments, WshEnvironment, WshNetwork, WshShell, WshShortcut, WshSpecialFolders and WshUrlShortcut. A full description of WSH objects, methods and properties can be found in the WSH help file on your Windows 2000 CD under \valueadd\msft\extradocs\script.

WSH allows scripts to manipulate every part of the operating system. If you have scripting skills, WSH's uses are endless. For example, you can create shortcuts, add users to the active directory, edit the registry and provide pop-up reminder messages, as well as perform numerous administrative tasks.



saving JScript files, use a JS extension. When saving a script file in Notepad, place the filename in quotation marks. If you don't, Notepad adds a TXT extension to the file.

Compared to other programming tasks, the creation of WSH scripts is quite easy. After deciding between VBScript and JScript, you construct your script with WSH objects. You can find a listing of WSH objects, methods and properties in the WSH help file. Running a script is a very simple affair; let's look at the command-based method first. Open a command prompt by opening the Run option from the Start menu and typing 'command'. Alternatively, you can access the command prompt through the Accessories submenu.

Once you're at the command prompt, use the syntax 'cscript filename [/options] [/parameters]'. Be sure to include the full path of the script file as well as its extension. The 'options' element allows you to enable or disable various WSH options, such as displaying the banner at execution time, or running in batch mode or interactive mode. These host options are always preceded by two slashes. The 'parameters' item refers to script parameters, which are preceded by a single slash.

Using WSCRIPT.EXE to run a script is much simpler than using the command style. Any time you double-click on a file with a VBS or JS extension, it calls the WSCRIPT.EXE file by default and the script is executed. You can also use WSCRIPT.EXE in a similar fashion to CSCRIPT.EXE via the Run option. Open up the Run dialog box from the Start menu and enter your command as you would at the command prompt. The same host options apply,

```

C:\WINNT\System32\command.com
Microsoft Windows [DOS]
(C) Copyright Microsoft Corp 1998-1999.

C:\>cscript
Microsoft Windows Script Host Version 5.1 for Windows
Copyright (C) Microsoft Corporation 1996-1999. All rights reserved.

Usage: Cscript scriptname.extension [/option...] [arguments...]

Options:
//B      Batch mode: Suppresses script errors and prompts from displaying
//D      Enable active debugging
//E:engine Use engine for executing script
//H:cscript Changes the default script host to CScript.exe
//J:jscript Changes the default script host to JScript.exe (default)
//I      Interactive mode (default, opposite of //B)
//h:help Execute a help job
//L:logo Display logo (default)
//NoLogo Prevent logo display: No banner will be shown at execution time
//C:cmdline Save current command line options for this user
//T:time Time out in seconds: Maximum time a script is permitted to run
//X      Execute script in debugger
//Q      Use Unicode for redirected I/O from the console

C:\>cscript d:\temp\script\shortcuts.vbs
  
```

▲ Customise the running of your script.

Creating scripts

There are no special editors for creating WSH scripts. VBScript and JScript files are just plain text files with a VBS or JS extension, so the only tool you need is Notepad. When saving a VBScript file, give the filename a VBS extension. When

except for the 'logo' and 'nologo' options, as no banner is used with WSCRIPT.EXE.

There are a couple of options you can set when you run the WSCRIPT.EXE file. Executing this file by itself brings up a window that allows you to change two options: you can choose to display the banner when a script is executed in the command console, or choose to stop the script after a specified number of seconds. Being able to halt scripts after a certain amount of time allows you to prevent a badly written script from hogging system resources for too long. These options can also be configured for individual scripts by right-clicking the script file, selecting Properties and then selecting the Script tab.

Sample scripts

Microsoft provides a bundle of sample scripts with WSH. You can download these scripts from the Microsoft scripting Web site (msdn.microsoft.com/scripting/windowshost/download/) as well as from this month's cover CD. These scripts provide a very good basis for learning what WSH can do, and what you can accomplish with some basic programming knowledge.

The sample package includes scripts written in both VBScript and JScript. The Chart and Excel scripts demonstrate how to use scripts with an OLE (Object Linking and

Embedding) server, and the Registry script shows you how to set and remove specific registry keys. Your system's variable settings can be retrieved with a script such as ShowVar, and the Network script shows you how to obtain network-related information about your computer, as well as how to map a network drive. The AddUsers and DelUsers scripts add and delete multiple users to the Directory Service by reading user account information from a Microsoft Excel spreadsheet. These two scripts do not work unless you run Windows 2000 Server with Active Directory. Finally, there's the Shortcut script, which is a very basic script that creates a shortcut to Notepad on your desktop.

WSH and viruses

Many of you will remember the ILOVEYOU virus. When computer users clicked on the VBS file attached to the offending email, WSH was responsible for running the script and allowed it to forward itself to everyone in their address books. This example shows that WSH is a very powerful tool, but it has its vulnerabilities, which is why some people prefer to disable it. However, instead of completely removing the ability to run scripts on a system, a better approach is to educate people about scanning their emails for viruses and showing caution before executing an attachment.

If you decide to disable WSH, the easiest way is to remove the VBScript and JScript associations. Log in with administrator privileges, then open My Computer. Select Folder Options from the Tools menu and then click on the File Types tab. Scroll down to the JScript Script File and VBScript Script File entries, and press the Delete button. When you are asked to confirm deletion, click Yes.

Removing the VBScript and JScript associations means that when you double-click on a script file, it doesn't run automatically. If you want to get rid of WSH completely, you have to delete the WSCRIPT.EXE and CSCRIPT.EXE files from \systempath\system32. Systempath is the folder where you installed Windows 2000.

A beta of the latest WSH is available for download and it should reduce the likelihood of another ILOVEYOU disaster. This release contains security advances that limit the potential to run malicious scripts. It also has command line improvements, and a WshRemote object that improves the ability to run commands from remote machines.

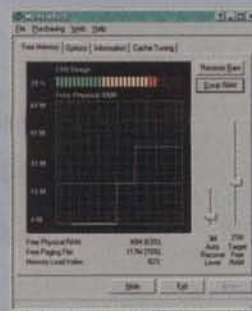
Version numbering of WSH is confusing; the version of WSH that comes with Windows 2000 is 5.1, but was referred to as 2.0. The latest version you can download from the Microsoft scripting Web site is 5.6 beta.

Windows shareware

Audiogalaxy Satellite 0.605

Use this program to search for MP3 files on the Net.

MemTurbo 2.1



Recover unused system RAM using this utility.

Morpheus 1.48

You can create some funky-looking images using this software.

Photothumb 1.0

This program allows you to put your digital photos up on the Web quickly and easily.

Tiny Personal Firewall 2.0.12

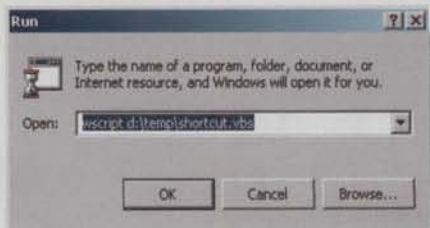
Protect your system from unwanted intruders with this free firewall.

These programs and others can be found on this month's cover CD, along with more detailed reviews.

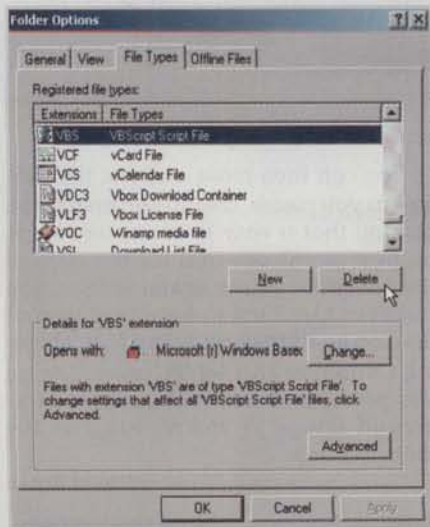
Script writing is a programming skill that takes time to master. If you have no desire to learn how to write your own scripts, you have plenty of company. However, you can download scripts that other talented people have written. A few Web sites that you might like to check out are www.winscriptingsolutions.com, msdn.microsoft.com/scripting, www.winscripter.com, wsh.and.cwashington.netreach.net.

Kieran McNamee

Keiran McNamee can be contacted at kmcnamee@acptech.net.



▲ Wscript can be used in a command-line form much like cscript.



▲ Remove the threat of malicious scripts by deleting script file associations.

Tame your desktop

Bring order to your desktop using management tools.

The Windows desktop is a convenient place to organise critical programs, directories and so on, but when it comes to organising the desktop, Microsoft fails to provide anything as flexible as the dedicated window managers available in Linux. Fortunately, a few easy tools can give you back control.

Windows can be downright stupid when it comes to desktop icons. Over time, the addition of onscreen icons can make it extremely difficult to find the programs you need, when you need them. Windows' various built-in Arrange Icons options (available by right-clicking on the desktop) don't really help much either; they just make Windows stack all the icons together, paying little attention to their function.

It is far more useful to arrange onscreen icons in a way that makes them easy to access from any application. For example, say you had a standard desktop that runs at 1,280 by 1,024 pixels and has frequently used applications across the top edge of the screen, folders and drives along the right-hand side, music-related programs along the bottom, the recycle bin in the bottom left-hand corner, and system-related icons in the upper left-hand corner. To ensure that all the icons remain available during your computing sessions, you can adjust application window sizes to fall within this border.

Using this type of layout scheme can make life much easier in the long term, particularly as onscreen icons are live and can support dragging and dropping, unlike icons on the Start menu, which are only good for launching applications. However,

Windows has no respect for organisation; if the system crashes, rebooting into the 640 by 480 resolution safe mode rearranges all the icons according to the operating system's whim. When rebooting back into the standard high-resolution desktop, the icons remain disorganised.



A similar thing happens when games, which generally reset the desktop to 640 by 480 or 800 by 600 resolution, exit abnormally and forget to return the desktop to its previous state. The result is a chaotic blob of icons shoved against the left-hand side of the screen.

This hampers productivity by forcing you to hunt and click.

Fortunately, you can relieve this problem and save yourself the extra few minutes it takes to rearrange things. If you use a tool like 12Ghosts SaveLayout, you can automatically save the state of your desktop for future recovery.

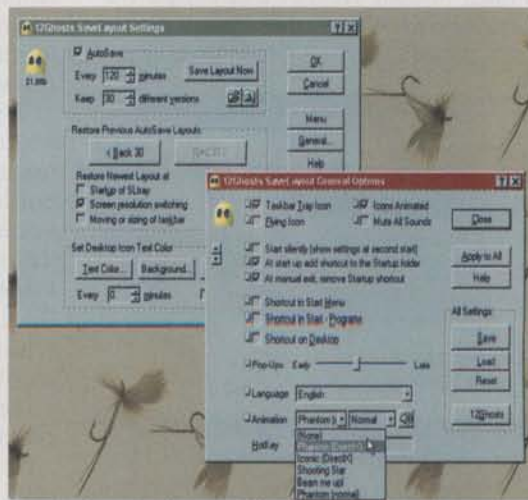
SaveLayout sits in the background and automatically saves the desktop configuration into a file at regular intervals. It can also be programmed to write an updated file whenever the screen resolution is changed or the taskbar is moved.

The files it creates can be saved as part of overall system backups or sent to other computers. This makes it a particularly useful feature for corporate desktop administrators wanting to roll out and maintain a standard desktop layout across multiple computers. It also provides a quick fix for users who accidentally delete links to critical applications, allowing administrators to easily put everything back where it should be. For more information, visit 12ghosts.com/ghosts/sl.htm or download the trial version from this month's cover CD. Registration costs \$US9; the full 12Ghosts PRO utility pack sells for \$US24.

Neat downloads

Many download managers default to saving applications straight to the Windows desktop. This can create a mess very effectively, as program files become interspersed with the things you need and use every day.

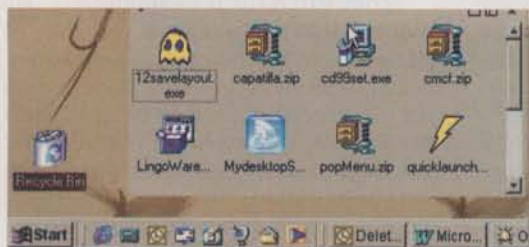
One solution is to redirect downloads to a dedicated Downloads folder, but it's easy to lose new files you've downloaded in the growing archive you create. You can stay on top of your downloads by creating a new directory — say, C:\New Downloads — and using Active Desktop to put its contents in a small window on the desktop. Do this by creating the directory, pointing your download manager to it, and then creating the Active Desktop window by right-clicking on the desktop and choosing Active Desktop, New Desktop Item, and typing C:\New Downloads after the Location: prompt.



▲ SaveLayout automatically saves your desktop.

You can then move and size the window as you please, creating an area of the desktop that is easy to access and keeps all new downloads in a discrete area of the screen for you to examine later. You can even blend the window in with your desktop by right-clicking inside it, choosing Customize This Folder, and following the prompts to select the same background image as you're using on the main desktop.

David Braue



▲ Adjust the size of your application windows so your icons are always available.

For a complete archive of APC Windows columns, see apcmag.com.

David Braue can be contacted at david@braue.com.

Government
Contract on Show
3-4 July 2001
Darling Harbour
Stand No123

PIONEER

COMPUTERS AUST. & NZ

brother®

**1GHz
from
\$2,990**



Pioneer Sohobook PIII 1GHz rrp\$2,990

Intel® Pentium® III Processor 1GHz
128Mb SDRAM, Up to 64M VGA
12 Gb Ultra DMA HD
24 X CD ROM
13.3" TFT LCD 1024X768
100/10Mb Lan + 56K Modem+2 x USB
1394 Firewire, All in one + TV out
3D Audio Stereo System
MS Windows 98 CD

Pioneer Powerbook PIII 1GHz rrp\$3,490

Intel® Pentium® III Processor 1GHz
128 Mb SDRAM, Up to 64Mb VGA
20Gb Ultra DMA HD
8X DVD ROM
14.1" TFT LCD 1024X768
100/10Mb Lan+56K Modem+2xUSB
1394 Firewire, All in one+TV out
3D Audio Stereo System
MS Windows 98 CD

**1GHz
from
\$3,490**



Brother Mp-21c Mobile Printer rrp\$626

color inkjet printer
No power supply,
PCMCIA connection,
Only weighs 1,000 grams
Only two cartridges for all four colours
Longer life printing than any ink cartridge

Brother 1240 laser Printer rrp\$618

Up to 12 page per minute
Crisp 600dpi print quality
Large input tray holds 250 sheets
Parallel and USB ports connection
Long life consumables
Network Interface Optional

Brother MFC9600 Laser All-in-one rrp\$2199

Up to 12 page per minute
Plain Paper Fax, Dual Access
Laser Printer, 600 x 600 dpi
Digital Copy, flatbed design
Color Scanner, 1200 x 1200 dpi
Send/receive faxes directly from PC

Brother 1650 laser Printer rrp\$1299

Up to 16 page per minute
8Mb of memory,
expandable up to 136Mb
Built-in Duplex for double
sided printing
3 colour backlit LCD for
status recognition
Large paper input up to 600 sheets
Network Interface Optional

Pioneer Computers Australia.

PioneerComputers.com.au
sales@pioneercomputers.com.au

Unit 2, 37 O'Riordan Street Alexandria NSW 2015
Phone: 02 9690 2888 Fax: 02 9690 0333

☎ Qld: 07 3257 3879 ☎ NZ: 649 534 3869

- Commonwealth Government Endorsed Supplier
- ISO9002 Quality Endorsed Company QEC 11489
- ITS 2000 (PC)
- ITS 2006 (Peripherals)
- ITS 839A (Portable Computers)
- ITS 2308 (Printer)
- QLD Government GITC Q-1263
- MAPS Group contractor 0203/0701 - IT Services
- PC World - Best Buys
- Australian Personal Computer - Editors Choice
- PC Mag - Editors Choice
- PC Authority - 'Speed' Award

ACT: 6253 2677, Auburn: 9648 1811, Burwood: 9744 6299, Bondi: 9387 3888 Central Coast: 4322 5115 Chatswood: 9415 1981, Coffs Harbour: 6652 8533,
Dee Why: 9972 2622 Double Bay: 9362 4348 Gordon: 9418 2945 Hornsby: 9482 8325, Hurstville: 9585 9988 Mosman: 9953 1684
Miranda: 9589 2300 Newcastle: 4940 0030 Parramatta: 9687 1896, Penrith: 4721 1046, Rockdale: 9567 9785, Sydney: 9299 0022, Wollongong: 4423 6516

Please call Pioneer for your nearest reseller

ALL PRICE INC. GST Warranty: Notebook: 1 Year Parts, 3-Year Labour Printer: 1 Year Parts and Labour

Unravel the mysteries of the Concurrent Version System.

Concurrent fun

Over the last two months, this column has investigated RCS, a basic revision control system that can be used by a single person to manage a small number of files. This month, we look at another revision control system: the Concurrent Versions System (CVS). CVS is based on RCS, but extends it so that it can manage many files with many people working simultaneously on a project.

Even though CVS is based on RCS, there are a number of significant differences worth mentioning.

- In RCS, the repository is a subdirectory called RCS beneath your working directory, but in CVS, the repository is usually stored in a central location away from your working directory (see figure 1).
- CVS supports access to repositories on another computer over a network, whereas RCS requires each person to have local access to the repository files.
- Most RCS operations affect one file at a time, but CVS can work on a whole directory tree at once.
- RCS is a suite of programs, each performing a different function (ci, co, rlog and so on), but all CVS operations are accessed through one command (cvs), using sub-commands (for example, 'cvs checkout' or 'cvs commit').
- RCS requires you to check files out explicitly with a lock before working on them, and check them back in when you're done, but CVS doesn't have this restriction (more on this important point later).

Starting a CVS repository

Getting started with CVS is a little more involved than with RCS. First, you need to decide on a location for the CVSROOT (the repository directory). A CVS repository can store more than one project, so you should give this directory a generic name. For our example, we'll call it



'cvsroot', and place it in our home directory (username 'g').

If CVS doesn't know where its repository is meant to be, it uses an environment variable called CVSROOT to find out its location. To set that variable (presuming that you use bash or a similar shell), use a command such as the following.

```
export CVSROOT=/home/g/cvsroot
```

To initialise the CVS repository, you must run 'cvs init'. CVS creates the repository directory if it doesn't exist, and it creates a subdirectory within it to store all of its administrative files.

Finally, create a directory to store your project in (we'll call ours myproject).

```
mkdir /home/g/cvsroot/myproject
```

Now that you have a repository with a project directory, you need to create our working directory. This can be done with the following command.

cvs checkout myproject

This creates a subdirectory called myproject, and if you have any files stored in the repository, the latest versions of all of those files are copied into the working directory. From here, you can create some test files in your working directory to check into the repository.

Adding a new file to the repository from your working directory is a two-step process. The first step tells CVS that there's a new file for it to take notice of, and the second step uploads the file into the repository.

```
cvs add myfile
cvs commit myfile
```

When you run 'cvs commit', the vi editor is loaded so you can type a check-in comment. If you prefer a different editor, you can specify it on the command line.

```
cvs -e joe commit myfile
```

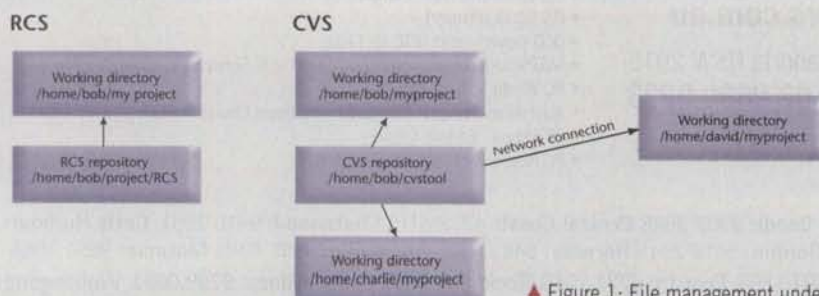
You can also change the default by setting the environment variable EDITOR.

Unlike RCS, once CVS has checked the file in, it doesn't remove it, leaving the file writable for you. If you want to continue to modify myfile, go ahead; there's no need to check it out as you would with RCS. When you want to commit any changes to myfile into the repository, type cvs commit myfile, and you'll be prompted for your next check-in comment.

As mentioned before, CVS can work on a whole directory tree at once. If you leave off the filename by using a command such as 'cvs commit', CVS commits every changed file in the directory (including any subdirectories). The check-in comment you type is applied to every file.

As checking files out from the repository is a one-off operation in CVS, there needs to be a way to retrieve changes made by other users of the repository. This is done with the 'cvs update' command. As for the 'cvs commit' command, if you don't specify a filename, the update runs on every file in the current directory.

As 'cvs update' runs, it modifies your working directory if any files in the repository have changed. Whenever it encounters a file that has changed in the repository, it prints out the filename prefixed with a U (for updated). For example, if someone else had modified myfile and you then ran 'cvs update', you would see the following.



▲ Figure 1: File management under CVS

U myfile

The 'cvs update' command also tells you if you have modified any files but not yet committed the changes, by printing the filename prefixed with an M (for modified). Similarly, if you have created a file in your working directory and you haven't run 'cvs add' on the file, it is flagged with a question mark.

You might be wondering what CVS has done with the RCS idea of locking, where you are required to lock a file before modifying it to guarantee that one person won't overwrite another person's changes. The answer is that if you try to make a change when someone else has made a change before you, the change fails, and you need to merge the changes you made into the latest revision that was committed. By requiring this merge process, CVS ensures that changes aren't lost.

Imagine that you modify revision 1.1 of a file, but before you commit it, someone else also modifies the same revision and then commits their changes. When you try to commit your changes with 'cvs commit', you will see the following.

```
cvs commit: Up-to-date check failed for 'myfile'
cvs [commit aborted]: correct above errors first!
```

To merge the changes, type cvs update. If the changes don't conflict, CVS automatically merges the changes for you and displays a message such as the one below.

```
RCS file: /home/g/cvsroot/myproject/myfile,v
retrieving revision 1.1
retrieving revision 1.2
Merging differences between 1.1 and 1.2\
into myfile
```

Learning more

There is plenty of useful information available about CVS, both as part of CVS and on the Internet. You can get the CVS manual simply by typing `info cvs`. There is also the CVS manual page (type `man cvs`), which is useful as a quick reference to the CVS commands and options.

The CVS Bubbles Web site at www.loria.fr/~molli/cvs-index.html contains many links to CVS resources available online.

Generally, if the changes made by you and the other person are in different parts of the file, there won't be a problem with CVS automatically merging the changes. However, you should review the final result, because CVS can only tell if the changes conflict textually; that doesn't necessarily mean the end result makes sense.

If the changes do conflict (for example, if you both modified the same line in a file), CVS will display the following.

```
rcsmerge: warning: conflicts during merge
cvs update: conflicts found in myfile
```

In this case, CVS will put both versions of the conflicting lines into your file, with the markers >>>>>>, =====, and <<<<<< placed around the offending sections, so that it is obvious where the trouble spots are. It is then up to you to decide whose version should end up in the file and edit it appropriately before committing it.

Having to resolve conflicts might sound like a hassle, but it's rare in most projects for this to be a problem. The advantage of not needing to pursue people when they forget to release a lock generally outweighs the disadvantage of occasionally needing to do conflict resolution.

Multuser access

For other people on your system to have access to a CVS repository, you need to make sure that they have write access to the CVS repository directories. The best way to do this is to create a Linux group for people to whom you wish to give access, and make that a group-writable directory.

Provided that the group already exists (we'll assume that it has the same name as the project — myproject), we could make our project directory group-writable by running the following commands.

```
chgrp -R myproject /home/g/cvsroot/myproject
chmod -R ug+rwX /home/g/cvsroot/myproject
```

To get access to the repository, the people in the myproject group could now set their CVSROOT environment variable and run 'cvs checkout myproject', just as you did when you initially created your working directory.

There are a few ways to set up access to a repository across a network. For modest network access requirements, such as allowing local users remote access, CVS supports the use of a remote shell such as RSH or preferably SSH. To

Linux shareware

Astaro Security Linux

This custom Linux distribution is designed to be used on Internet gateways.

Hylafax 4.1 beta 3

This faxing application is capable of sending and receiving thousands of faxes each day.



Opera 5 beta 7

This Web browser is fast, feature-packed, standards-compliant and compatible with Netscape plug-ins.

Samba 2.2

Samba allows Linux machines to perform Windows file and print sharing.

Webmin 0.85

This friendly and comprehensive Web-based Linux configuration tool has a wide variety of plug-ins.

These programs and more can be found on this month's cover CD, along with more detailed reviews.

make this work, all the remote client needs to do is specify the CVSROOT in the following format.

```
:ext:user@hostname:/path/to/repository
```

In the above code:

- 'ext' stands for external remote shell
- 'user' should be replaced with the username on the server
- 'hostname' should be replaced with the server hostname
- '/path/to/repository' should be replaced with the pathname of the repository on the server.

Geoffrey Bennett

Geoffrey Bennett can be contacted at geoffrey@netcraft.com.au.



For a complete archive of APC Linux columns, see apcmag.com.

Mobile Internet access means more
than just Web surfing.

A better Net for handhelds

When you think of accessing the Internet, Web surfing and email usually spring to mind. However, there are many other ways of using the Internet, some of which are customised to improve access from a handheld device.

The Internet is essentially a communications platform based on the TCP/IP protocol that allows devices such as PCs and PDAs to communicate with other devices, such as Web or email servers, around the world. This protocol is also used for many other applications and has several layers of functionality. The Internet places virtually no limits on the type of applications that can be run over it. For example, you can run a terminal session to a Windows 2000 system, back up data files to a server, access newsgroup servers, or synchronise your clock with one of many atomic clocks around the world.

Mobile Internet access has created a need for special Net-based applications. At the moment, technologies such as GSM limit connection speeds to 9,600bps. This is six times slower than the 56K connection possible with a landline modem on a PC. Admittedly, physical distance and other limitations mean it's rare to reach the full connection speed of 56K, but it's usually fast enough to make surfing over a mobile phone connection seem frustrating. Several alternatives are available, but these are often limited to sites that have been created to use their technologies. However, there are literally hundreds of these sites available internationally and the number of Australia-specific sites is increasing every day.

Controlling email

Sending and receiving email can be much more manageable than Web browsing on a mobile connection. However, if you plan to access email on a handheld regularly, there are some basic things you should change to keep down your time online and use it more efficiently.

Email messages contain a text portion and an optional file attachment. Typical text-only messages range from 1K to 10K in size and don't take much time to pull down from the Internet, so they're quite manageable, even at low speeds. However, what do

you do about junk mail, or material that's less urgent? You may decide that up to two-thirds of your messages aren't so important that you need to read them when you're mobile.

You can save a lot of time by setting up your email client to pull down message headers only. Message headers are usually only a few characters long and transfer quickly. Once they're in your PDA inbox you can browse through them and decide which messages you want to retrieve a full copy of.

You should also consider whether you need to download your attachments. A 40K spreadsheet can take several minutes to load onto your PDA. Moreover, if you have a Palm, you need to make sure you have the necessary email plug-ins to allow you to read the attachments you're accessing. Pocket PC users also need to install programs to view anything other than Excel, Word or basic graphics.

If you use the Palm Mobile Internet Kit, tap on the application button and select the MultiMail program that comes with it. Your email account should have been configured during your Windows installation. When you tap on the Receive or Send/Receive buttons, you see an option to pull down Headers + Bodies or Headers Only. Select the Headers Only button to get the new headers in your mailbox. Once you've pulled down all of the headers, place a tick in the checkbox



▲ The Palm Mobile Internet Kit

next to the messages you want to read, tap on the menu button then on Get Selected Bodies to pull down the complete message. You can also tap on the Options/Preferences menu to restrict the size of the messages being transferred. Size is set to 8K by default, which should be fine unless you routinely need to access much bigger messages.

This function is not as easy to set up on a Pocket PC. Tap on the Start menu and go to Programs to run the inbox program. Tap on the Tools menu and select Options while you're not connected to the Internet. Double-tap on your email settings to edit them (see APC March, page 130), and then tap the Next button four times. This screen gives you two options: Get message headers only, or Get full copy of messages. You can also restrict the size of the full copy.

Beyond Web browsing

Several alternatives have been developed to combat the sluggish network performance of mobile computing, including the Wireless Application Protocol (WAP). This is basically a stripped-down version of standard Web browsing. The screen dimensions are reduced, most graphics are taken out and a reduced set of layout options is available. WAP is usually built into newer mobile phones and can also run on PC, Palm and Windows CE/Pocket PC platforms. WAP browsing uses WML (Wireless Markup Lan-



▲ Palm Web clipping applications

guage) rather than conventional HTML to format pages, and until recently, the number of usable sites has been limited.

This month's CD includes a number of WAP browsers that work on the Palm, Pocket PC and Windows systems. WAP works a little differently on a PDA than on a mobile phone. Phone users generally need to configure their WAP settings manually, and these vary depending on what network you use. No such setup is required for a PDA WAP browser; the device just needs to be connected to the Internet (see APC March, page 130).

Quick tip: Pocket PC add-on cards

When you use an external MMC or CompactFlash card for the Pocket PC, data files copied to the external memory don't automatically show up in program list views. For example, if you create a directory called Music in the root of the storage card (\Storage Card\Music) and use Windows Media Player 7, none of your files show up in the file list. The only way around this is to use the File Manager, manoeuvre around your file system, and double-tap on the individual files to open them.

The problem occurs because programs installed on your Pocket PC look in the My Documents folder by default when searching for data files. As the Pocket PC is so much like your Windows desktop, it's easy to assume that it manages files the same way, and that you can create any directory structure you like under the Storage Card folder. The Pocket PC operating system works slightly differently to Windows, but there is a very easy solution to this problem.

Pocket PCs look globally for a My Documents folder, not just under the root. This means that if you create the folder \Storage Card\My Documents, anything you place under the My Documents folder will be found by the applications on your Pocket PC. You can then create any subdirectory structure you like for your business files, music, photos, or other documents.

Generally, programs don't need to be stored here. When you add a program to your Pocket PC and choose to install it on the MMC or CompactFlash card, it doesn't matter where it resides.

PDAs tend to be easier to use than mobile phones in a WAP environment, because their screens are larger and entering information is easier. WAP reacts much faster than standard HTML Web browsing on a slow connection because it contains very little formatting.

Most WAP sites work on the portal model, offering links to a wide variety of information and services such as news, weather, traffic, movie listings, TV guides, shopping and email. You can also check flight details for a variety of airlines, and many sites offer shopping facilities.

Using WAP over a mobile phone can be very expensive, so it's often better to check out sites on your PC first, using the Windows WAP browser on this month's cover CD. It's a quicker way of finding interesting sites and will save you a lot of money in the long run.

Minding your PQAs

Another option for Palm users is the Palm Query Application (PQA). This is only available through the Palm Mobile Internet Kit and the dotWAP NEO1 wireless modem for the PalmVx (reviewed on page 24). PQA is often referred to as Web clipping. It uses a client/server approach, linking a basic PQA on your handheld with specific data services on the Internet. For example, in the US there is a site that will provide you with up-to-date traffic reports on any major city. The list of cities resides on your Palm, and once you select a city and the type of information required, the application grabs the data off the server and delivers it in a simple, predetermined format.

The formatting is done on the Palm; all you get from the Internet is highly compressed data. A lot of the content in standard Web browsing is made up of screen formatting, so PQAs are very fast, even on a slow connection. Most PQA sites are single purpose, so one disadvantage is that, unlike WAP, you might need a separate application for each PQA site.

Some PQAs give you instant live access to news, stock market information, shopping, airline flight information, traffic reports, travel information, reference guides, directories and more. There are hundreds of PQAs available for download at wireless.palm.net/apps. The Palm Mobile Internet Kit comes with some good sample PQAs and a separate CD with a few Asia-Pacific and Australia-specific applications.

The Palm Mobile Internet Kit has several other benefits, including a Palm 3.5 OS

PDA shareware

Stock Manager

Monitor your stocks from anywhere and maintain your entire portfolio with this application.



Name	Price	Profit
Apple	16.375	92.55
Adobe	51.5	3452.02 +D
AMD	24.00	600.05 +
Euro-Canada	1.412869	0 +
Euro-Dollar	0.9371	0 +
IBM	112.22	80.54 +
Intel	34.6875	-179.33 +

Profit: 3417.80 US\$
 Profit M: 33.84% Cost: 10098.93
 Profit P: 44.28% Value: 13516.74

Sunysoft GSM Manager

Use this utility for total control over your mobile phone using your Pocket PC — manage your phone book, SMS and more.

Chopper Alley

This helicopter emulation has to be seen to be believed.



Turjak II

Great graphics and sound make this an exciting addition to your Pocket PC game collection.

Acrobat Reader for Palm

Now you can carry Acrobat documents with you, even if they have graphics. This tool was reviewed in APC June, page 42.

All these packages and more can be found on this month's cover CD, along with more detailed reviews.

upgrade, a WAP browser and an improved mail client. It's optimised for slow connections and performs even faster than WAP.

These technologies are a quick fix rather than a permanent solution to the current bandwidth limitations. New products, including private switched wireless networks and 3G technologies, will eventually have a big impact on how handhelds are used, but it will be a while before the technologies described above are superseded.

Ronald Rosenbaum

Ronald Rosenbaum can be contacted at ron@ats.au.com.



For a complete archive of APC PDAs columns, see apcmag.com.

Upgrading to Mac OS X is easy if you know a few trade secrets.

X marks the spot

Apple's next-generation operating system, Mac OS X, is finally here. The hardware requirements aren't excessive: at least 128M of RAM and 1.5G of free disk space, and you can use any G3 or G4 model except the original PowerBook G3. The virtual memory subsystem is far more efficient than in earlier system software, but additional RAM is still a good idea.

Three problems were experienced by those who tried OS X early and upgraded their hardware in various ways.

First, beige G3s and iMacs are fitted with tray-loading CD drives, so you can only install Mac OS X in a partition that's wholly within the first 8G of the master hard drive. If you upgrade, you need to create at least two partitions — the first no larger than 8G — and then install Mac OS X in it. It's inconvenient, because it means backing up the drive, partitioning, installing Mac OS 9.1 and X on the first partition, and then restoring the old files to the second partition. Some people who switch frequently between Mac OS X and 9.1 recommend that you use two partitions even if it's not required by your hardware. That way, you can start up from a copy of Mac OS 9.1 that is completely separate from your Mac OS X installation.

Second, OS X requires you to use built-in video or "an Apple-supplied iXMicro, ATI or nVidia" card. APC has only used Mac OS X with built-in video, but apparently other cards can be used in addition to, but not instead of, the standard video hardware.

Third, Mac OS X seems to be less forgiving of marginal RAM, and memory modules for earlier system software can cause crashes. According to one report, slight differences between modules from

different manufacturers are enough to cause this problem. About the time it released OS X, Apple also released firmware upgrades for recent models that include a more rigorous memory test during startup.

Installation

Before you start installation, a full backup is a good idea. Also take note of your TCP/IP settings, including the IP address (if you have a static address) and the DNS address(es). You can export the settings and import them later, but a scribbled note is just as quick and easy.

You can only install Mac OS X on a computer that's already running 9.1. Even if you have already installed or upgraded to 9.1, it's a good idea to use the clean installation of 9.1 that comes as part of the Mac OS X package. That way, you can be sure you have a standard and uncluttered system folder for the Classic environment under Mac OS X. Once you're up and running, you can add your favourite extensions and so on. If a program requires an item that's incompatible with Mac OS X, you can always boot straight into Mac OS 9.1 by selecting your old system folder in Startup Disk.

To clean install 9.1, start up from the CD-ROM. If you own one of the latest Macs that shipped with 9.1, use the CD that came with the computer, rather than the one from the Mac OS X box. Run the installer, and when you reach the Select Destination step, click the Options button, select Perform Clean Installation, click OK, and then continue the process as normal.

After the installation is complete and you restart the Mac, hold the mouse button down to eject the CD-ROM. If you have the new Pro Keyboard, you can use the Eject button (top right-hand corner of the numeric pad).

Allow the Setup and Internet Setup assistants to do their job — that's why writing down your TCP/IP settings is useful. It's a good idea to check that your Internet settings are working, as Mac OS X can automatically copy

them, and it likes to go online during the setup process.

Next, put the Mac OS X CD-ROM in the drive, and double-click Install Mac OS X. When the splash screen appears, click the Restart button. Eventually, the installer comes up. Select the appropriate language, read the important information and select the destination volume (most likely, your Mac's built-in hard disk). Unless you are really strapped for disk space, select Easy Install. The Customize button allows you to save space by omitting some of the printer drivers and components that are only needed for the Developer package.

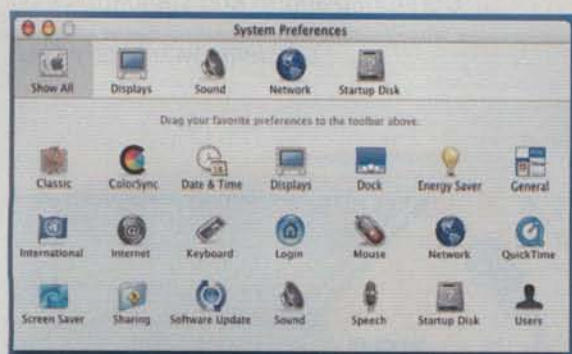
The install takes 10 to 15 minutes. When it's ready to finish the process, your Mac grabs your attention with a burst of music. You need to answer some obvious questions to finalise the installation.

Allowing Mac OS X to use your 9.1 Internet settings means you start off with consistent settings in both environments. It's also worth entering your existing iTools account details, because iTools is neatly integrated with Mac OS X. If you don't have an account, now's the time to get one (see 'iTools' on the next page for details).

The installer automatically registers Mac OS X with Apple, but if your Mac can't establish an Internet connection, don't press the Cancel button — the system will just hang. If you press command-option-escape, the Force Quit dialog appears so you can kill off the offending program. Mac OS X doesn't recommend a restart after Force Quit; that's one advantage of a multitasking



▲ The Login preferences pane



▲ The System Preferences pane

operating system with protected memory. Mac OS X's Help Center fetches documents through the Internet as they are required, so a live connection is best while you are finding your way around.

The Dock

The Dock combines the functions of an application switcher, favourites launcher and control strip. This is one area where you could experience interface confusion. The habit of reaching for the top right-hand corner of the screen to switch between applications can be very ingrained. Control-tab still works, but it functions through the Dock, rather than jumping between programs.

Add-on modules for the Dock — the equivalent of control strip modules (CSMs) — are also appearing. Early examples of these 'docklings' include On-Core's Audio-CD Player and Volume, which includes CDDDB support and can be found on this month's cover CD.

System Preferences

Control panels have been dropped in favour of a new feature, System Preferences. You can open System Preferences from the Dock or the Apple menu.

Many of the preferences correspond to old control panels, but some functions have been aggregated. For example, the Network preference contains settings from the TCP/IP, AppleTalk, Modem, Internet and Location Manager control panels. However, only features directly related to networking are included from the latter two.

Even where a preference and a control panel appear identical, Apple has opted for consolidation. For example, the QuickTime preference includes a button that checks for online updates, so it is no longer necessary to explicitly launch the QuickTime Updater.

You can drag the preferences you use most often onto the toolbar at the top of the System Preferences window. To remove an icon from the toolbar, just drag it out again. When you release the mouse button, the icon disappears, leaving the original item in the main part of the window.

Users

Mac OS X is based on Unix, so support for multiple users is built in, rather than added as an afterthought.

The Users preference is the equivalent of the Multiple Users control panel. To create a new user, enter the person's full name (case sensitive), a short name (up to eight characters), a password and, if you wish, a password hint. If an account has a hint, it is displayed after three unsuccessful attempts to enter the password. Choose the hint carefully; it should indicate which of your passwords is the right one, but it shouldn't give anyone else a clue to the password. Most people don't need to give other people administration rights, so leave the checkbox at the bottom of the window clear.

Setting up for multiple users also requires a visit to the Login preference. In the Login window tab, clear the box labelled 'Automatically log in'. This forces people to enter a username and password when the computer starts up. Automatic login is fine for a personal machine in a reasonably secure area, but when you're sharing machines, you don't want to make it easy for people to use your identity.

iTools

There are good reasons for setting up an iTools account if you don't already have one. iTools features are neatly integrated with Mac OS X. Once the operating system knows about your iTools account (you can provide your username and password during installation), you can open it by choosing iDisk from the Finder's Go menu. If you use iDisk frequently, you might find it more convenient to add it to the Finder window toolbar. An easy way to do this is to open the iDisk with the Go command, then switch the view of its window to column (click the far right option in View in the toolbar). Now drag the iDisk icon onto the toolbar. Apple is using iDisk to distribute Mac OS X software, so you'll probably want to check it regularly.

Mac OS shareware

Default Folder 2.1

Use this utility to enhance your Open/Save dialogs.

DragThing 4.0

This launcher has many configuration options, plus Mac OS X compatibility.



GraphicConverter 4.0.5

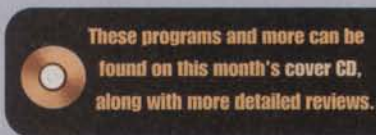
This is an OS X version of perhaps the most widely used graphics tool for Mac.

Screen Catcher 2.3.2

This update to the Mac OS 9.1 screen capture utility can also capture entire Web pages.

Tex-Edit Plus 4.1.2b2

This highly competent text editor offers styled text and many text options, plus Mac OS X compatibility.



To use the Mail application with your iTools mac.com address, open the Internet preference, select the Email tab, and check the box labelled Use iTools Email Account. You can now send and receive mail through the mac.com servers.

Developer tools

For the first time, Apple has released a Macintosh operating system complete with the tools to create your own programs. Install the package from the Developer Tools CD, and you can build and run programs.

Stephen Withers

Confront platform and standardisation problems with binary files.

End of the line

It is sometimes said that confession is good for the soul. With this encouraging thought in mind, it's time to admit that last month's column contained not one, but two errors.

The first is a typo in the function `Usage()`, found in the file `studbase.cpp` on the cover CD. The help text displayed by the function gave incorrect instructions on how to add a student to the database. The second mistake was a structural error in the program architecture. This had no effect on the operation of last month's program, but it crippled the modifications planned for this month's column. To understand the nature of this error, you first need to understand this month's topic.

There's data . . . and then there's data

There are two main ways to store data in a file: in binary format, or in ASCII format (often referred to as text format).

Character data can be represented by the ASCII codes that represent the characters (see 'Cleaning up your code' June 1999, page 163, and 'a + b = c?' August 1999, page 156; also on apcmag.com under Workshop, Practical C++). For example, an A has an ASCII value of 65, and the digit 1 has an ASCII value of 49. Many languages cannot be easily represented using ASCII, and a more advanced encoding system called Unicode is gaining wide acceptance (this will be covered in a later column).

When you save data in a text file, you write out a text representation of the data using the appropriate ASCII codes. When you save it to a binary file, you use a direct binary format to store the data. If you save a text string, the text and binary formats are likely to be much the same; the ASCII codes that correspond to the characters in the string are used. If you save a number, the formats are likely to be different. To save the number 123 to a binary file, you might save a single value of 123 in a single byte. To save it to a text file, you would probably save the ASCII codes 49, 50 and 51 (for the digits 1, 2 and 3) using three bytes. You might also save an 'end of line' character after it to mark the end of the record.

The data file in last month's program was a typical text file. Each record was on a line by itself, and records could be of any length — a popular and flexible format. This month's program takes a slightly different approach and stores the data in a binary file.

When reading or writing data from or to a file, the file can be open in one of two modes: text or binary. On a Unix or Linux system, the two modes function almost identically. On a DOS or Windows system, there are some important differences.

Under Unix or Linux, each line in a text file is terminated with a 'newline' character, usually written as `\n`. This has the ASCII value of 10. Under DOS and Windows, each line of a text file is terminated with a pair of characters; a carriage return or `\r` character, with an ASCII value of 13, and the newline character. When you write a `\n` character to a DOS or Windows text file, the operating system converts it to a `\r\n` pair. Similarly, when you read a `\r\n` pair, it is converted into a single `\n` character. If you're reading and writing text data, that's exactly the behaviour you need. However, if you're reading and writing binary data, it's a disaster, as any bytes with the values 10 or 13 are candidates for data corruption.

It gets worse. DOS 1.0's file system doesn't keep track of how large files are. The only way you can identify the end of a file is by the occurrence of an 'end of file' (EOF) character (ASCII value 26). The DOS file system has kept track of file lengths since version 2.0 in the early 1980s, but backward compatibility with the EOF marker has been maintained. When a DOS or Windows program reads an ASCII 26, the operating system reports that you've reached the end of the file — and nothing you do will allow you to read past that point. If your binary data happens to contain a byte with the value of 26, you're in deep trouble.

The solution is to open your file in binary mode. If you do, the magic ASCII values of



10, 13 and 26 are read and written with no interference from the operating system.

Code mode

This relates to the second error in last month's column. If you open a file without specifying the mode, as last month's code did, it defaults to text mode. That's not a problem, as text mode was required in the original listing.

However, this month the plan was to transparently replace the `CStudent::Read()` and `CStudent::Write()` methods with binary equivalents, with no change to the `CRoll` class. This is where the problem arises.

In older, pre-ANSI/ISO standard versions of C++, the `fstream` (file stream) class had a method — `setmode()` — that allowed the mode to be set to binary or text as needed. The plan for this month's code was that the new binary versions of `CStudent::Read()` and `CStudent::Write()` would call `setmode` and ensure that the file was in the correct mode before reading or writing. Unfortunately, the `setmode()` method is no longer supported under ANSI/ISO C++. The mode of a file can only be set if an extra parameter is provided when the file is opened. This means that the `CRoll::Read()` and `CRoll::Write()` methods from last month must be changed when the files are opened.

See listing 1 for the revised versions of the `CRoll` methods. The other changes to the program are shown in listings 2 and 3. These are discussed next month. Until then, keep on coding!

Michael Smith



For a complete archive of APC C++ columns, see apcmag.com.



Michael Smith can be contacted at emmenjay@zip.com.au.

C++ source code

Listing 1: Part of Roll.cpp

```

bool CRoll::Read()
{
    std::ifstream fi(m_fname.c_str(),
                     std::ios_base::binary);
    if (!fi)
        return false;
    CStudent s;

    while (s.Read(fi))
        Add(s);

    return m_data.size() > 0;
}

bool CRoll::Write()
{
    data_t::iterator i;
    std::ofstream fo(m_fname.c_str(),
                     std::ios_base::binary);
    if (!fo)
        return false;

    for (i = m_data.begin();
         i != m_data.end();
         i++)
    {
        i->Write(fo);
    }

    return fo.good();
}

```

Listing 2: Part of Student.cpp

```

bool CStudent::Read(std::ifstream &is)
{
    SStudent s;

    is.read(reinterpret_cast<char*>(&s),
             sizeof(SStudent));
    m_studNo = s.m_studNo;
    m_familyName = s.m_familyName;
    m_otherNames = s.m_otherNames;
    m_address = s.m_address;
    m_DOB = s.m_DOB;

    return is.good();
}

```

```

bool CStudent::Write(std::ofstream &os)
{
    SStudent s;

    s.m_studNo = m_studNo;
    StudUtes::SafeCopy(s.m_familyName,
                       m_familyName.c_str(),
                       LENSTR);
    StudUtes::SafeCopy(s.m_otherNames,
                       m_otherNames.c_str(),
                       LENSTR);
    StudUtes::SafeCopy(s.m_address,
                       m_address.c_str(),
                       LENSTR);
    StudUtes::SafeCopy(s.m_DOB,
                       m_DOB.c_str(),
                       LENDOB);

    //os << std::ios_base::binary;
    os.write(reinterpret_cast<char*>(&s),
             sizeof(SStudent));
    return os.good();
}

bool CStudent::Print(std::ostream &os)
{
    os << m_studNo << std::endl
       << m_familyName << std::endl
       << m_otherNames << std::endl
       << m_address << std::endl
       << m_DOB << std::endl;
    return os.good();
}

```

Listing 3: Part of Studbase.cpp

```

bool DoFind(CRoll &r,
            int argc,
            char *argv[])
{
    if (argc != 3) {
        Usage();
        return false;
    }
    CStudent s;
    bool rs = r.Find(atoi(argv[2]), s);
    if (rs)
        rs = s.Print(std::cout);
    return rs;
}

```

 All these listings can be found on this month's cover CD.

Inheritance makes building new abstract data types in Java a cinch.

Stacks and queues

Recently, this column has been exploring abstract data types in Java. Arrays were used to represent a bag of integers, and a linked list was made to store data items. This month, explore two other common and useful data types: a stack and a queue.

Stacks

A stack is commonly thought of as a last-in/first-out (LIFO) structure for containing data. This means that when you retrieve data from a stack, the piece of data most recently put in is the first one to be retrieved. The next most recent is the next to be retrieved, and so on. New elements are always added to the top of the stack, and the element at the top of the stack is always the first to be retrieved.

Entering data is commonly referred to as pushing data onto the stack. Retrieving data is commonly referred to as popping data from the stack. Popping data physically removes it from the stack, so a given data item can only be popped once, unless you push it back onto the stack. Think of a stack of trays at a cafeteria; the person washing trays pushes clean trays onto the top of the stack, and customers pop them off.

The May column dealt with linked lists. Rather than implement a stack from scratch, you can build on your list data type. To make a stack from a linked list, you need to attach new nodes to and remove nodes from the end of the list. This achieves the LIFO behaviour that you want.

The use of a linked list as the underlying implementation of a stack also provides a good illustration of the benefits of inheritance in object-oriented programming. You will see in the code listings that you have already developed a linked list class; you can derive a stack subclass with only a few lines of new code.

Queues

A queue is commonly thought of as a first-in/first-out (FIFO) structure for containing data. This means that when you retrieve data from the queue, the element of data that has been in the queue the longest will be the first item retrieved.

Putting data into a queue is commonly referred to as enqueueing data, and retrieving data is often referred to as dequeueing. New items are put at the end of the queue;

items are dequeued from the start of the queue. Everyone is familiar with queues from daily life such as in banks, supermarkets and libraries, and at the movies. If nobody pushes in, the person who has been in line the longest will be the next person to be served.

You can build on your linked list knowledge again to implement a queue. In this case, you just need to attach new nodes at one end and remove them from the other end. This provides the FIFO behaviour you want.

As with the stack, the use of a linked list as the underlying implementation of a queue provides a good illustration of the benefits of inheritance in object-oriented programming. You can derive a new queue class from your linked list with only a few lines of new code. You get two useful data structures with only slightly more effort than is required for one.

Some notes

The first two listings that appeared last month (and which can be found on this month's cover CD 1) con-



tained the code for a linked list of integers. This month's listings consist of new stack and queue classes, followed by test classes to demonstrate them.

There are some important features to note. As with last month's linked list, you can use the `java.io.Serializable` interface to allow your data structures to be easily saved to and loaded from a disk. What you learned last month can be applied directly to your new data types, because they also implement `java.io.Serializable`.

You should also note how simple the code is for the stack and queue implementations, as they both derive from the linked list. For example, the routines to display the contents of the stack and queue merely call the equivalent linked list routine.

Notice that the `pop()` and `dequeue()` methods have the same function; they remove the data item at the head of the stack or queue and return its value. In this case, because the code is the same, it would make more sense to add a new method to the underlying linked list class, and then both `pop()` and `dequeue()` would just call this method. This hasn't been done here so that you can clearly see that you have made two new data structures without having to modify the list class in any way. Compile and run the two test programs and observe the order in which data is removed from each data type, in relation to the order in which it was first inserted.

David Williams

```
C:\WINDOWS\System32\cmd.exe
> java TestStack
--> Testing stack class
--> Pushing 20
--> Pushing 30
--> Pushing 40
--> Pushing 50
--> Stack contents
Number of nodes: 4
50 40 30 20
--> popped 50
Number of nodes: 3
40 30 20
--> Pushing 60
Number of nodes: 4
60 40 30 20
--> popped 60
--> popped 40
--> popped 30
--> popped 20
Number of nodes: 0
```

▲ A sample run of TestStack.java

```
C:\WINDOWS\System32\cmd.exe
> java TestQueue
--> Testing queue class
--> Enqueueing 20
--> Enqueueing 30
--> Enqueueing 40
--> Enqueueing 50
--> Queue contents
Number of nodes: 4
20 30 40 50
--> dequeued 20
Number of nodes: 3
30 40 50
--> Enqueueing 60
Number of nodes: 4
30 40 50 60
--> dequeued 30
--> dequeued 40
--> dequeued 50
--> dequeued 60
Number of nodes: 0
```

▲ A sample run of TestQueue.java



David Williams can be contacted at
david.williams@altitude.com

Java source code

IntStack.java — a stack data type

class IntStack extends IntList implements java.io.Serializable

```
{
    public void push (int item)
    {
        insertAtHead (item);
    }
    public int pop ()
    {
        int result;
        if (numNodes == 0)
            result = -1;
        else
        {
            result = head.getData ();
            removeFromHead ();
        }
        return result;
    }
    public void showStack ()
    {
        showList ();
    }
}
```

IntQueue.java — a queue data type

class IntQueue extends IntList implements java.io.Serializable

```
{
    public void enqueue (int item)
    {
        IntNode aNode = head;
        IntNode inNode = new IntNode (item, null);
        if (aNode == null)
            head = inNode;
        else
        {
            while (aNode.getLink () != null)
                aNode = aNode.getLink ();
            aNode.setLink (inNode);
        }
        numNodes++;
    }
    public int dequeue ()
    {
        int result;
        if (numNodes == 0)
            result = -1;
        else
        {
            result = head.getData ();
            removeFromHead ();
        }
        return result;
    }
    public void showQueue ()
    {
        showList ();
    }
}
```

TestStack.java — a program to test the stack implementation

public class TestStack

```
{
    public static void main (String[] args)
    {
        System.out.println ("—>Testing stack class\n");
        IntStack stack1 = new IntStack ();
        Add (stack1, 20);
        Add (stack1, 30);
        Add (stack1, 40);
        Add (stack1, 50);
        System.out.println ("—>Stack contents");
        stack1.showStack ();
        System.out.println ("—> popped " + stack1.pop ());
        stack1.showStack ();
        Add (stack1, 60);
        stack1.showStack ();
        System.out.println ("—> popped " + stack1.pop ());
        System.out.println ("—> popped " + stack1.pop ());
        System.out.println ("—> popped " + stack1.pop ());
        System.out.println ("—> popped " + stack1.pop ());
        stack1.showStack ();
    }
    private static void Add (IntStack stack1, int Value)
    {
        System.out.println ("—> Pushing " + Value);
        stack1.push (Value);
    }
}
```

TestQueue.java — a program to test the queue implementation

public class TestQueue

```
{
    public static void main (String[] args)
    {
        System.out.println ("—>Testing queue class\n");
        IntQueue queue1 = new IntQueue ();
        Add (queue1, 20);
        Add (queue1, 30);
        Add (queue1, 40);
        Add (queue1, 50);
        System.out.println ("—>Queue contents");
        queue1.showQueue ();
        System.out.println ("—> dequeued " + queue1.dequeue ());
        queue1.showQueue ();
        Add (queue1, 60);
        queue1.showQueue ();
        System.out.println ("—> dequeued " + queue1.dequeue ());
        System.out.println ("—> dequeued " + queue1.dequeue ());
        System.out.println ("—> dequeued " + queue1.dequeue ());
        System.out.println ("—> dequeued " + queue1.dequeue ());
        queue1.showQueue ();
    }
    private static void Add (IntQueue queue1, int Value)
    {
        System.out.println ("—> Enqueuing " + Value);
        queue1.enqueue (Value);
    }
}
```



Integrate dynamic content into a static Flash movie.

The Flash dynamic

Last month, Insite looked at sending email with PHP, using Flash rather than regular HTML forms to achieve this. This month, Insite returns to using Active Server Pages (ASPs) and also explores the idea of integrating server scripting with Flash movies. The principles covered this month apply regardless of which server-side scripting language you use. As usual, this month's example movies can be found on the cover CD, along with the complete source code for the ASP pages.

Sending a request

To populate a Flash movie with data from the server you must first request the data from within the movie. This is done using Flash's built-in scripting language, called Action Script. It can be used to determine what you do and don't see in a Flash movie. It can also display information in text fields.

Flash 4 and Flash 5 each handle text slightly differently, so two examples are supplied on the CD: demo fla and demo5 fla. Each contains three text fields

that display your IP address, browser type, and the time and date. These fields will be filled with text retrieved from the server. To request this text, create an Action Script in the first frame of the movie, as shown in listings 1 and 2.

To prepare your movie to use the incoming data in Flash 5, set your text fields to Dynamic Text, and specify the variable name that will be used from the incoming data supplied by the ASP page you will build. For the three text fields, use the variable names 'IP', 'browser' and 'date', as in figure 1. If you use Flash 4, click the button at the bottom of the toolbar labelled 'abl' (see figure 2).

The next step is sending the requested data back to the Flash movie. This is extremely easy and just involves sending a single line of text back to the Flash movie in a query string format. The syntax is always as follows.

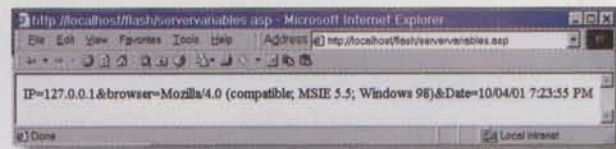
```
Name1=value1&Name2=value2&Name3=value3
```

To create the string required on the server with ASP, use the code in listing 3. This creates three variables called 'IP', 'browser' and 'todaysDate' in the ASP page. These are joined together in a line of text in the format shown above using the names specified in the Flash text variables settings. The first line of the ASP page sets the content type of the response. This is optional, but it's a good idea, as it allows the Flash movie to know that the text may be URL encoded — very useful if you are transmitting text with unusual ASCII values. When viewed in a browser, this page looks similar to figure 3. However, when you go to the published Flash movie, you get a more interesting result, as shown in figure 4.

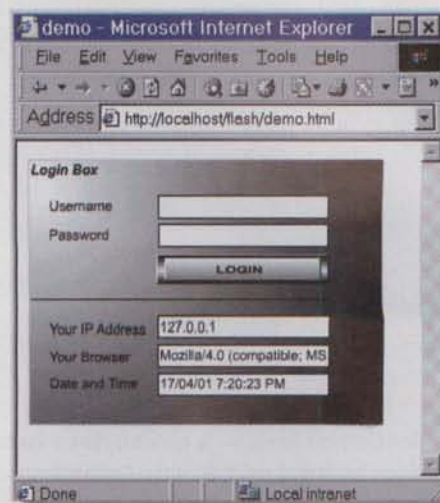
Dynamic data requests

So far, the Flash movie in our example makes a static, unchanging request for dynamic server variables. To make the data user driven, you need to be able to make dynamic requests. For example, you could use a form to search a database or to look up login information.

To do this, two text fields that send a username and password from Flash



▲ Figure 3

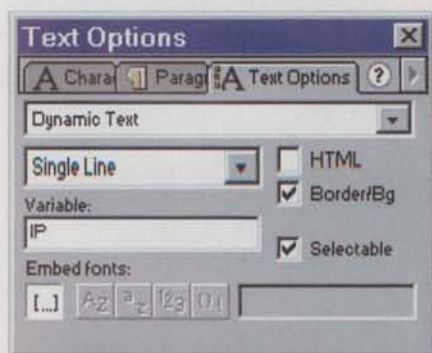


▲ Figure 4

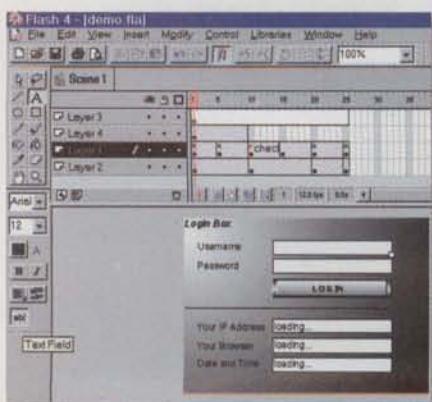
to an ASP page can be used. If the login details are correct, the Flash movie moves to a particular frame, allowing you to view the password-protected information.

To achieve this, add two text objects. Set one to type Input Text, as shown in figure 5 and the other to type Password by editing the text object's properties. They are accessed by right-clicking the object.

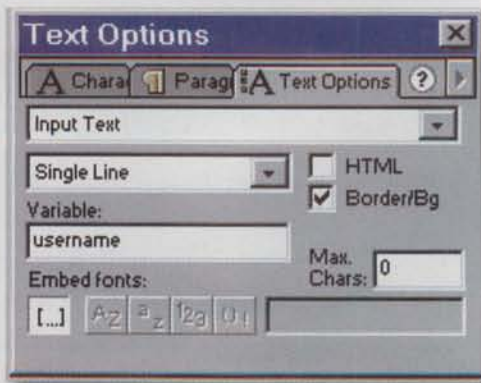
Give these the variable names 'username' and 'password'. Next, create a button with an Action Script as shown in listings 4 and 5. This time, the variables will be sent as POST data (as form variables) to the ASP page called checkLogin.asp. Figures 6 and 7 demonstrate these settings for Flash 4 and 5 respectively.



▲ Figure 1



▲ Figure 2



▲ Figure 5

Insite source code

Listing 1

```
Load Variables ("servvariables.asp", 0)
Set Variable: "login" = "0"
```

Listing 2

```
loadVariablesNum ("servvariables.asp", 0);
login = "0";
```

Listing 3

```
<%
Response.ContentType = "application/x-www-urlformencoded"
IP = request.servervariables("REMOTE_ADDR")
browser = request.servervariables("HTTP_USER_AGENT")
todayDate = now()

returnString = "IP=" & ip
returnString = returnString & "&browser=" & browser
returnString = returnString & "&DateTime=" & todayDate

response.write returnString
%>
```

Listing 4

```
On (Release)
Load Variables ("checklogin.asp", 0, vars=POST)
Go to and Play ("checking")
End On
```

Listing 5

```
on (release) {
loadVariablesNum ("checklogin.asp", 0, "POST");
gotoAndPlay ("checking");
}
```

Listing 6

```
<%
Response.ContentType = "application/x-www-urlformencoded"
if request.item("username") = "admin" then
if request.item("password") = "pass" then
response.write "login=1"
else
response.write "login=2"
end if
else
response.write "login=2"
end if
%>
```

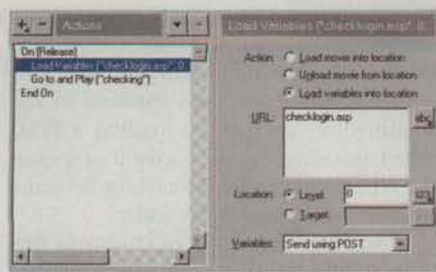
Listing 7

```
If (login=1)
Go to and Stop ("LoggedIn")
Else If (login=0)
Go to and Play ("checking")
Else If (login=2)
Set Variable: "username" = ""
Set Variable: "password" = ""
Set Variable: "login" = "0"
Go to and Play (1)
End If
```

Listing 8

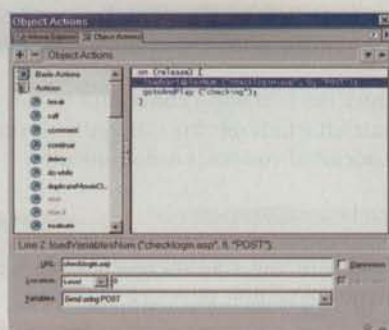
```
if (Number(login) == 1) {
gotoAndStop ("LoggedIn");
} else if (Number(login) == 0) {
gotoAndPlay ("checking");
} else if (Number(login) == 2) {
username = "";
password = "";
login = "0";
gotoAndPlay (1);
}
```

For the complete code for all the pages used here, check this month's cover CD.



▲ Figure 6

The checkLogin.asp page called from the Flash movie is given in listing 6. It checks for the username 'admin' and the password 'pass', and returns login=1 for a successful login and login=2 for a failed



▲ Figure 7

attempt. The time it takes to check the login varies depending on your connection speed, so the Flash movie loops a few

frames while it waits for a response from the server. If no response is received, it loops forever — but you can write a time-out if you wish.

Listings 7 and 8 show how to check for the login value from within the Flash loop. A successful login sends the Flash movie to the frame called LoggedIn, thus displaying password protected data inside the movie. An unsuccessful login sends you back to the login at frame 1, and all the variables are reset to empty.

Next month, Insite continues to investigate ways of integrating dynamic content with Flash movies.

Daniel Potts

For a complete archive of APC Insite columns, see apcmag.com.

Daniel Potts can be contacted at daniel@indigointeractive.com.au

Make the most of the free Java database development environment on this month's cover CD.

Get into Cloudscape

Developed by Informix, Cloudscape is a Java and SQL-based, object-relational database management system. It allows you to quickly develop database-driven applications that can run on any Java-supported system. Built to run in any Java Virtual Machine (JVM), it's particularly suited to developing applications that communicate between PCs and mobile devices such as handhelds, and allows for the synchronising of data between multiple users. You can use Cloudscape to develop any applications you like, but additional licences are required when you deploy those applications to new users.

To get the most from Cloudscape, you need some familiarity with Java development and the construction of SQL statements (both of which are beyond the scope of this article).

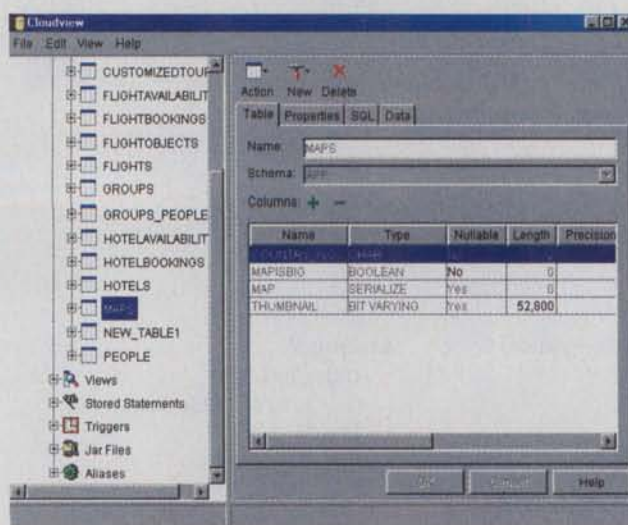
Two versions of the complete personal edition (a 27M download) are included on this month's cover CDs: a Windows version and a nonplatform-specific Java version. This overview is based on the Windows version, which runs on Windows NT/2000 and Windows 98, but not on Windows 95. It's considerably easier to install this version than the Java version, because it automatically detects whether you have an appropriate JVM and makes other adjustments without your intervention.

To install the Windows version, run the `cloudscape36.exe` program directly from the cover CD. This adds a Cloudscape folder to your Start menu, including subfolders for documentation and program files. Don't panic if the installation routine is slow; verifying existing Java installations and adding the uninstall routine takes time.

Accept the default directory suggested for installation. The install routine can't handle spaces in directory names, which is why the Program Files directory generally used for Windows programs isn't suitable.

Things to try

To see a database system created under Cloudscape in action, you can launch



▲ To see Cloudscape in action, launch the ToursDB demo.

the ToursDB demo from the Programs option under Cloudscape on the Start menu. This launches the Cloudview browser, which allows you to browse the data and objects held in a Cloudscape database. In this instance, it opens up a sample database based on a travel agency application.

To see how an example database file can be created in Cloudscape, follow these steps (make sure you shut down the ToursDB demo first). The code that executes the Cloudscape commands to create the database can be found in the file `CloudscapeSimpleApp.java`.

- Launch a command line window.
- Now, switch to the `Cloudscape_3.6\frameworks\embedded\bin\` directory.
- Enter the following command to run a batch file that sets the classpath file and associated variables automatically.

```
setEmbeddedCloudscapeCP
```

- Switch to the `Cloudscape_3.6\demo\programs\simple` directory.
- To ensure that the classpath has been set correctly, enter the following command.

```
java COM.cloudscape.tools.sysinfo -cp  
embedded CloudscapeSimpleApp.class
```

A successful install results in a message ending in the following text.

SUCCESS: All Cloudscape-Related classes for embedded environment found in class path.

If you don't receive this message, you know one or more of the environment variables has been set incorrectly. This is indicated in the output. Hints on how to fix this can be found in the example HTML file, which is in the same directory (if you have followed the default installation options, this will be `Cloudscape_3.6\demo\programs\simple\example.html`). If you already have the demo running elsewhere in Windows, this command will probably fail.

- To run the Java application that creates the database, enter the following command.

```
java CloudscapeSimpleApp
```

This creates the sample database and a new table, and adds a number of rows to it.

A second example application, which creates a copy of the ToursDB demonstration database, is also supplied in the example files. Working with this database is explained in the online tutorial provided (see below for more information).

To understand where Cloudscape might fit into your development strategy, read 'Getting started with Cloudscape'. This explains how basic Cloudscape can interact with existing data and be adapted for more complex server applications. You can access the document by clicking on the User Documentation link under Documentation on the Start menu. Click on Cloudscape Documentation and then on the document name. Some of the steps specified in the documentation (such as loading a JVM) aren't immediately necessary if you used the Windows installer, which handles some of these processes automatically.

If you want to explore Cloudscape further, a full HTML tutorial document is available by clicking on User Documentation in the Documentation option under Cloudscape on the Windows Start menu. This will help you work with the example files created by Cloudscape during installation. Other useful information, including PDF versions of the online documentation suitable for printing, can be accessed at www.cloudscape.com.

Angus Kidman

EcomComputers



Sydney CBD 33 York St Ph: 9299 0022 Fax: 9290 1173
 Chatswood 27 Albert Ave Ph: 9415 1981 Fax: 9415 2150
 Erina 202 The Entrance Rd Ph: 4367 0299 Fax: 4367 0298
 Parramatta 38 George St Ph: 9687 1896 Fax: 9687 3757
 Toll Free Number 1300 369 838

www.ecomcomputers.com.au

Please call to confirm
 availability of all offers.

Open 7 Days - (Sydney & Erina 6 Days)
 Mon - Fri 9am - 6pm, Sat 10am - 4pm, Sun 10am - 3pm

Finance to approved purchasers through A.G.C. for Private or Flexirent for Business

COMPAQ Armada E500

Intel® Pentium® III 600 MHz
 6.0GB Ultra DMA HDD
 128MB SyncDRAM
 ATI RAGE 8Mb 3D Video
 24X CD ROM - 1.44mb FDD
 56Kbs ITUU V.90 Int. Modem
 10/100 Ethernet
 13.3" TFT Screen
 Stereo Audio System
 MS Windows® 98 SE
 1y Next Day Pick Up Warranty
 (Including 1y Parts & Labour)



\$2999

DeskPro SB Desktop

Intel® Pentium III® 800MHz
 Intel® i810 Chipset
 64MB SDRAM
 20GB Ultra ATA HDD
 Intel® i810 AGP
 1.44mb FDD
 48x CD- ROM
 Integrated Audio
 Compaq 104 Keyboard
 Compaq Mouse
 15" Compaq Monitor
 MS Windows® 98 SE
 Norton Antivirus
 3y Warranty (1y OnSite)



\$1499

IPAQ Pocket PC

Intel® Strong ARM
 32 bit RISC 206MHz
 32Mb RAM (Col) 16Mb (Mono)
 16Mb ROM
 12 bit TFT 240x320 display
 15 Grayscale (Mono Version)
 Lightweight 170 grams
 Windows Pocket PC
 Speaker & Microphone



COMPAQ

\$749
 Mono
\$1199
 Colour

Neoserver C500

Neoserver small business
 server perfect for small
 office or home network
 Celeron™ 500MHz CPU
 128kb Cache
 64Mb RAM
 13Gb + 17Gb HDD
 56k Modem
 8 Port Hub
 10/100 NIC



COMPAQ

\$999

Ecom CUSTOM SYSTEMS

Ecom SOHO 650

Intel® Pentium® III 650
 64MB 133MHz SDRAM
 10GB UATA 66 HDD
 8Mb AGP 3D Video
 1.44mb FDD
 ATX 250w MIDI Case
 40x CD ROM Drive
 Amplified Stereo Speakers
 56k Data/Fax/Voice Modem
 104 Keyboard
 PS/2 Mouse & Pad
 15" Monitor
 MS Windows® 98 SE or ME
 1 years RTB Warranty



\$1299

Ecom SOHO 866

Intel® Pentium® III 866MHz
 or AMD Athlon 900 MHz
 128MB 133MHz SDRAM
 20GB Ultra ATA 100 HDD
 32m nVidia TNT2 AGP Video
 1.44mb FDD
 Aopen 250w MIDI Case
 32x8x4 CD Burner
 12x DVD ROM
 Sound Blaster 128V Audio
 Amplified Stereo Speakers
 56k Data/Fax/Voice Modem
 BTC 104 Keyboard
 Logitech Scroll Mouse
 17" Samsung Monitor
 MS Windows® 98 SE or ME
 Norton Antivirus 2000
 1 years Limited Warranty



\$2199

Ecom Signature 1.4GHz

Intel® Pentium® 4 1.4GHz
 128MB RDRAM PC800
 20GB UATA 7200rpm HDD
 32m TNT2 M64 Video
 1.44mb FDD
 Aopen 250w MIDI Case
 50x CD Drive
 32x8x4 CD Burner
 Sound Blaster 128V Audio
 Stereo Speakers
 56k Data/Fax/Voice Modem
 104 Keyboard
 Logitech Scroll Mouse
 17" Mitsubishi Monitor
 MS Windows® 98 or ME
 Norton Antivirus 2000
 3 years Limited Warranty



\$2499

Ecom GT4 1.7GHz

Intel® Pentium 4® 1.7 GHz
 256MB RDRAM (PC 800)
 60GB UATA 100 HDD
 64m GeForce-2 GTS Video
 32x12x10 CD Burner
 Pioneer 16x DVD ROM Drive
 Deluxe 250w MIDI Case
 Sound Blaster Live Value
 Altec Lansing Subwoofer spker
 56k Data/Fax/Voice Modem
 Logitech Multimedia Keyboard
 Logitech Scroll Mouse
 19" Hitachi CM771 Flat Monitor
 MS Windows® 2000 Pro
 3 years Limited Warranty



\$4999

COMPAQ

Armada 100S

AMD K6-2 550 MHz
 5.0GB Ultra DMA HDD
 64MB SyncDRAM
 4Mb Video (shared)
 24X CD ROM
 1.44mb FDD
 56Kbs V.90 Int. Modem
 12.1" TFT Screen
 Stereo Audio System
 MS Windows® 98 SE
 MS Word 2000
 1y Parts & Labour
 Warranty



Free
 Word 2000**
\$2399



Armada M700

Intel Pentium III 650 MHz
 6.0GB Ultra DMA HDD
 128MB SyncDRAM
 8Mb ATI Rage Video
 24X CD ROM
 1.44mb FDD
 56K Modem
 10/100 NIC
 14.4" TFT Screen
 1y P/Up Warranty
 Stereo Audio
 Win 98 SE



\$3999

Armada M300

Intel Pentium III 500 MHz
 12.0GB Ultra DMA HDD
 128MB SyncDRAM
 4Mb ATI Rage Video
 External 1.44mb FDD
 56K Modem
 10/100 NIC
 11.3" TFT Screen
 Stereo Audio
 1y P/Up Warranty
 Win 98 SE
 1.48 kg
 Super Slim



\$3499

Incredible Notebook

Ecom 1000MHz

Intel® Pentium® III 1000MHz
 20GB Ultra DMA HDD
 256MB SDRAM
 Up to 64Mb 3D Video (shared)
 8X DVD
 1.44mb FDD
 56Kbs Int. Modem
 10/100 Base Ethernet
 14.1" TFT Screen
 I-EEE 1394 Firewire Port
 Stereo Audio System
 MS Windows® ME
 1y Warranty



Digital Video
 Firewire
 Enabled
\$4499



* Network Solutions & Support
* Quality & Service Guaranteed

* PC Troubleshooting
* After Sales Support

Shop online at www.qflow.com.au



"Add a year to the life of your PC...
Buy an iomega drive today!"

acer

Acer Communications
& Multimedia



\$2,488 Inc.

Upgrade to 15" TFT \$495

SPECIAL

* Pictured with optional
Acer CDRW 32x10x8x

PowerFlow FLAT PANEL TFT

Intel P3/1 GHz CPU
14.1" Acer TFT Display Monitor
Gigabyte VIA Chipset 4x AGP Mbd
20GB Seagate ATA100 5400 RPM HDD
128 MB PC133 SDRAM
100 MB Internal ZIP Drive
32MB Riva TNT2 4XAGP SVGA Card
50x Acer EIDE CD ROM
A Open KF45A Midi Tower
Acer Multimedia PS/2 KB
Logitech PS/2 Mouse
Microsoft ME
Norton Antivirus 2001
upgrade to a 15" TFT for \$495

Notebook Special

Hilander Notebook

HL-38P/100D-20
Intel P3/1 GHz
8MB SVGA Display
256MB SDRAM
20GB HDD
14.1" TFT LCD Screen
3.5" Internal FDD
8x Internal DVD
Smart Battery 4 Hrs Standby
Microsoft ME

\$3795 Inc.

PowerFlow AMD 1.3GHz

AMD 1.3 GHz CPU
Asus A7V 133 Mbd
30 GB Seagate ATA100 5400RPM HDD
256 MB PC133 SDRAM
100 MB Internal ZIP Drive
32/10/4 Acer CD Burner
56K Internal Modem
Creative SB128 PCI Sound Card
A Open KF45A Midi Tower
Acer Multimedia PS/2 KB
Altec Lansing ACS-33 Speaker
Logitech PS/2 Mouse
17" Acer 77E Monitor
Microsoft ME
Norton Antivirus 2001
upgrade to 250 MB Internal ZIP Drive \$69

\$2695 Inc.

PowerFlow P4/1.4GHz

Intel P4/1.4 GHz CPU
Intel P4 Mother board
64MB Geforce 2 MX Card
40 GB Seagate ATA100 7200RPM HDD
128 MB PC133 SDRAM
100 MB Internal ZIP Drive
32/10/8 Acer CD Burner
16x Pioneer DVD ROM
56K Internal Modem
Creative SB128 PCI Sound Card
Inwin Pentium 4 Case
Acer Multimedia PS/2 KB
Altec Lansing ACS-33 Speaker
Logitech PS/2 Mouse
17" Acer 77E Monitor
Microsoft ME
Norton Antivirus 2001
upgrade to P4/1.5GHz \$149

\$3295 Inc.

Auburn
Shop 10
191 Paramatta Rd
Ph: 9648 1811
Fax: 9648 1711

Eastwood
Shop 39
Eastwood Shopping Centre
Ph: 9874 9211
Fax: 9874 9311

Fairfield
Shop 1
36 The Horsley Drive
Ph: 8715 5334
Fax: 9724 4077

Five Dock
Shop 1
128 Great North Rd
Ph: 9713 8649
Fax: 9713 8719

Newcastle
805 Hunter St
Ph: 4940 0030
Fax: 4969 8522



Peripheral Plus[®] Making IT work

Duron 800 soho

- AMD Duron 800MHz Processor
- Microstar 6378 Motherboard
- Peripheral Plus Midi Tower Case
- 64MB PC-133 SDRAM
- 20Gb ATA-100 Hard Drive
- 1.44Mb Floppy Disk
- 52x CD ROM
- Integrated Shared Video
- Integrated AC 97 Audio
- Netcomm 56K PCI Modem
- 15" Samsung 550S Monitor
- 120 Watt Speakers
- Peripheral Plus Keyboard & Mouse
- Microsoft Windows ME
- Lotus Smartsuite ME
- PC-Cillin Anti-Virus
- 3 year Limited National On Site Warranty**

\$1499 \$66 per month*

Duron 800 value

- AMD Duron 800MHz Processor
- Microstar K7T Turbo Motherboard
- Peripheral Plus Midi Tower Case
- 64MB PC-133 SDRAM
- 20Gb ATA-100 Hard Drive
- 1.44Mb Floppy Disk
- 52x CD ROM
- nVIDIA TNT2 16MB Vanta
- Integrated AC 97 Audio
- Netcomm 56K PCI Modem
- 17" Samsung 750S Monitor
- Altec Lansing ACS-33 3 Piece Speakers
- Peripheral Plus Keyboard & Mouse
- Microsoft Windows ME
- Lotus Smartsuite ME
- PC-Cillin Anti-Virus
- 3 year Limited National On Site Warranty**

\$1795 \$80 per month*

Athlon 1000 soho

- AMD Athlon 1GHz DDR Processor
- Microstar K7T Turbo Motherboard
- Peripheral Plus Midi Tower Case
- 128MB PC-133 SDRAM
- 20Gb ATA-100 7200rpm Hard Drive
- 1.44Mb Floppy Disk
- AOpen Combo DVD & CDRW Kit
- GeForce 2 MX 200 32MB
- Integrated AC 97 Audio
- Netcomm 56K PCI Modem
- 17" Samsung 750S Monitor
- Altec Lansing ACS-33 3 Piece Speakers
- Peripheral Plus Multimedia Keyboard
- Peripheral Plus Optical Wheel Mouse
- Microsoft Windows ME
- Lotus Smartsuite ME, PC-Cillin Anti-Virus
- 3 year Limited National On Site Warranty**

\$2525 \$108 per month*

Athlon 1000 ddr

- AMD Athlon 1GHz DDR Processor
- Microstar K7T-266 Pro Motherboard
- Peripheral Plus Midi Tower Case
- 128MB PC-2100 DDR SDRAM
- 30GB ATA-100 7200rpm Hard Drive
- 1.44MB Floppy Disk
- Aopen Combo DVD & CDRW Kit
- GeForce 2 MX 400 64MB
- Integrated AC 97 Audio
- 56K PCI Modem, 10/100 PCI Ethernet
- 17" Samsung 753DF Monitor
- Altec Lansing ACS-33 3 Piece Speakers
- Peripheral Plus Multimedia Keyboard
- Peripheral Plus Optical Wheel Mouse
- Microsoft Windows ME
- Lotus Smartsuite ME, PC-Cillin Anti-Virus
- 3 year Limited National On Site Warranty**

\$2895 \$124 per month*

Athlon 1330 ddr

- AMD Athlon 1.33GHz DDR Processor
- Microstar K7T-266 Pro Motherboard
- Peripheral Plus Midi Tower Case
- 256MB PC-2100 DDR SDRAM
- 30GB ATA-100 7200rpm Hard Drive
- 1.44MB Floppy Disk
- Aopen Combo DVD & CDRW Kit
- GeForce 2 MX 400 64MB
- Integrated AC 97 Audio
- Netcomm 56K PCI Modem
- 17" Samsung 753DF Monitor
- Altec Lansing ACS-33 3 Piece Speakers
- Peripheral Plus Multimedia Keyboard
- Peripheral Plus Optical Wheel Mouse
- Microsoft Windows ME
- Lotus Smartsuite ME, PC-Cillin Anti-Virus
- 3 year Limited National On Site Warranty**

\$3095 \$128 per month*

Athlon 1400 ddr

- AMD Athlon 1.4GHz DDR Processor
- Microstar K7T-266 Pro Motherboard
- Peripheral Plus Midi Tower Case
- 256MB PC-2100 DDR SDRAM
- 40GB ATA-100 7200rpm Hard Drive
- 1.44MB Floppy Disk
- Aopen Combo DVD & CDRW Kit
- GeForce 2 MX 400 64MB
- Hercules Game Theatre XP Audio
- Netcomm 56K PCI Modem
- 19" Samtron 96P Monitor
- Altec Lansing ACS-54 5 Piece Speakers
- Peripheral Plus Multimedia Keyboard
- Peripheral Plus Optical Wheel Mouse
- Microsoft Windows ME
- Lotus Smartsuite ME, PC-Cillin Anti-Virus
- 3 year Limited National On Site Warranty**

\$3925 \$161 per month*

VIA Award Winner

- AMD Athlon 1.33GHz DDR Processor
- Microstar K7T-266 Pro Motherboard
- Peripheral Plus Midi Tower Case
- 256MB PC-2100 DDR SDRAM
- 40GB ATA-100 7200rpm Hard Drive
- 1.44MB Floppy Disk
- Aopen Combo DVD & CDRW Kit
- Hercules GeForce 3 64MB
- Hercules Game Theatre XP Audio
- Netcomm 56K PCI Modem
- 17" Samsung 753DF Monitor
- Altec Lansing ACS-54 5 Piece Speakers
- Peripheral Plus Multimedia Keyboard
- Peripheral Plus Optical Wheel Mouse
- Microsoft Windows ME
- Lotus Smartsuite ME, PC-Cillin Anti-Virus
- 3 year Limited National On Site Warranty**

\$4195 \$173 per month*



For our latest pricing, check out our **WEB SITE** or **CALL** our **SALES STAFF**



For all sales inquiries call **1800 007 587**

For the latest pricing and online ordering visit our web site **www.perplus.com.au**

Tel 02 9630 3166 Fax 02 9630 3167
Unit 4, 1B Kleins Road, Northmead, NSW 2152



www.Ezonics.com

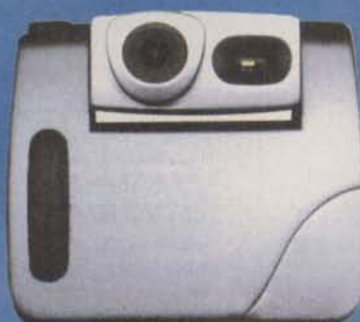
Ezonics®
we make high tech EZ



EZPhone Cam



EZCam II USB



EZDual Cam

EZPhone Cam

- ◆ EZVideo Chat software makes VIDEO CHATTING as EZ as phoning a friend. It's EZ, COOL and FUN !!!
- ◆ EZPhone Cam "Rings" and Antenna flashes when you receive a Video Call
- ◆ Phone Buddy List makes it EZ to see who is online and available to Video Chat
- ◆ One Touch Call Button makes having a Video Chat EZ and over the Internet it's FREE
- ◆ True Plug & Play installation. Simply plug your EZPhone Cam into your USB port. (NO interface card required)
- ◆ Capture Video at up to 30 frames per second. True full motion video

EZCam II USB

- ◆ Instantly take great colour pictures and videos
- ◆ Send Video E-mail to friends, family and business associates
- ◆ True plug & Play installation. Simply plug your EZCam USB II Camera into your USB port. (NO interface card required)
- ◆ Nine powerful software titles included. Send Video e-mail, Capture Still Images, Create Cards, Calendars and other projects

EZDual Cam

- ◆ It's a PC video Camera. It's a Digital Camera. It's a Dual Cam
- ◆ Send Video E-mail to friends, family and business associates
- ◆ Use your EZDual Cam as a stand alone VGA Digital Still Camera
- ◆ Capture Video at up to 30 frames per second. True full motion video
- ◆ Ten powerful software titles included. Capture video and still images. Send video E-mail, video conference and much more

DISTRIBUTED BY:



MAGPAC TRADING COMPANY

1/21-25 Redland Drive, Mitcham, Vic 3132

Ph: (03) 9873-4733 Fax: (03) 9873-4554

NSW, QLD: **ELSA** (02) 9879-5788
DMA (02) 9874-8466

SA: **TCB** (08) 8250-5721
BOOST (08) 8410-2722

VIC: **APCA** (03) 9763-8200
CCA (03) 9686-7966

WA: **APCA** (08) 9242-8588

YOU HAVE THE
POWER

MEET TOMORROW
HEAD-ON



THE REVOLUTIONARY ...

1333MHz AMD Athlon™ Processor With DDR...Now Available.



SYDNEY

TEL: (02) 9737-8277

FAX: (02) 9937-8977

Email: salesinquiry@apd.com.au



MELBOURNE
TEL: (03) 9720-0388
FAX: (03) 9720-0399

MELBOURNE
TEL: (03) 9543-7733
FAX: (03) 9544-0654

PERTH
TEL: (08) 9445-9500
FAX: (08) 9445-9450

NEWCASTLE
TEL: (02) 4957-8220
FAX: (02) 4957-8223

BRISBANE
TEL: (07) 3846-7588
FAX: (07) 3846-7488

ADELAIDE
TEL: (08) 8359-2666
FAX: (08) 8359-2766

AMD Athlon™ Processor Performance Benchmarks
Ziff-Davis Winbench™ 99 CPUmark™ 99, v1.1



AMD Duron™ Processor Performance Benchmarks
Ziff-Davis Winbench™ 99 CPUmark™ 99



SUPERIOR PERFORMANCE INKJET CARTRIDGES

CLICK IN & SAVE UP TO 60% OFF PRINTING COSTS

CANON COMPATIBLES FROM \$6.00

Code	OEM Equivalent	Compatible With:	Price
CC-1BK	BJI-642	BJ-300/330 Black	\$12.00
CC-2BK	BJI-201BK	BJC-600/610/620 Black	\$6.00
CC-3BK	BJI-643BK	BJC-800/820 Black	\$12.00
CC-4BK	BCI-21	BJC-2000/4000/5000 Series Black	\$7.00
CC-5CL	BCI-21C	BJC-2000/4000/5000 Series 3-Colour	\$12.00
CC-6BKHC	BJI-201BK HC	BJC-600/610/620 HI-Cap Black (14ML)	\$9.00
CC-7BK	BCI-10	BJ-30 Black	\$9.00
CC-8BK	BCI-11	BJC-70 Black	\$9.00
CC-9CL	BCI-11C	BJC-70 3-Colour	\$17.00
CC-11CL	BCI-61	BJC-7000 Series 3-Colour	\$32.00
CC-12PCL	BCI-62 PHOTO	BJC-7000 Series Photo 6-Colour	\$38.00
CC-13B	BCI-3	BJC-6000 Black	\$25.00
CC-14C	BCI-3C	BJC-6000 Cyan	\$16.00
CC-15M	BCI-3M	BJC-6000 Magenta	\$16.00
CC-16Y	BCI-3Y	BJC-6000 Yellow	\$16.00
CC-17PBK	BCI-3PBK	BJC-6000 Photo Black	\$18.00
CC-18PC	BCI-3PC	BJC-6000 Photo Cyan	\$18.00
CC-19PM	BCI-3PM	BJC-6000 Photo Magenta	\$18.00

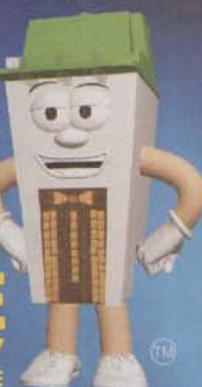
**100%
COMPATIBLE
WITH YOUR
CANON
PRINTER**



BUY 3 GET 1 FREE*
*Free cartridge must be of equal or lesser value than the lowest priced cartridge purchased



**FREE
DELIVERY
AUSTRALIA WIDE**



EPSON COMPATIBLES FROM \$17.00

Code	OEM Equivalent	Compatible With:	Price
CE-51BK	SO20025	STYLUS 800/1000 Black	\$16.00
CE-52BK	SO20034	STYLUS Colour/Colour Pro Black	\$20.00
CE-53CL	SO20028	STYLUS Colour/Colour Pro 3-Colour	\$30.00
CE-54BK	SO20047	STYLUS 200/820/Colour II /Ils Black	\$13.00
CE-55CL	SO20049	STYLUS 200/820/Colour II /Ils 3-Colour	\$21.00
CE-56PBK	SO20093	STYLUS Colour 400/500/600/Photo Black	\$17.00
CE-57CL	SO20097	STYLUS Colour 200/500 3-Colour	\$23.00
CE-58BK	SO20108	STYLUS Colour 800/850/1520 Black	\$17.00
CE-59CL	SO20089	STYLUS Colour 400/600/800/1520 3-Colour	\$23.00
CE-60PCL	SO20110	STYLUS Colour 700/Photo/Photo 700 5-Colour	\$26.00
CE-61BKCL	SO20138	STYLUS Colour 300 4-Colour	\$31.00
CE-65BK	SO20187	STYLUS Colour 440/640/660 Black	\$16.00
CE-66BK	SO20189	STYLUS Colour 740/760 Black	\$16.00
CE-67CL	SO20191	STYLUS Colour 440/640/660/740/760 3-Colour	\$26.00
CE-68PCL	SO20193	STYLUS Photo 750 5-Colour	\$33.00
CE-69CL	T003011	STYLUS Colour 900 Black	\$19.00
CE-70CL	T005011	STYLUS Colour 900 Colour	\$24.00
CE-71PCL	T001011	STYLUS Photo 1200 5-Colour	\$29.00
CE-72BK	T007	STYLUS Colour 870/1270 Black	\$24.00
CE-73CL	T008	STYLUS Colour 870 Colour	\$29.00
CE-74CL	T009	STYLUS Colour 1270 Colour	\$34.00

**100%
COMPATIBLE
WITH YOUR
EPSON
PRINTER**



BUY 3 GET 1 FREE*
*Free cartridge must be of equal or lesser value than the lowest priced cartridge purchased

New Reality's compatible inkjet cartridges will save you up to 60% when compared with the cost of original manufacturers cartridges.

Our cartridges are guaranteed to print as good if not better than the original. Just click them in and Save!

If you are not 100% satisfied with our cartridges return them and we will refund the full purchase price.....guaranteed!



**FREE CATALOGUE
WITH EVERY PURCHASE**

PAPER & MEDIA

SUPERIOR QUALITY AT AFFORDABLE PRICES



Product Code	Description	Sheets	Price	Price per Sheet
A4HRP	A4 90gsm Hi-Res Paper	100	\$ 15.00	0.15
A3HRP	A3 90gsm Hi-Res Paper	100	\$ 30.00	0.30
A4WF	A4 White Film 100mu	50	\$ 47.00	0.94
A3WF	A3 White Film 100mu	50	\$ 90.00	1.80
A4CF	A4 Clear Film 100mu	50	\$ 39.00	0.78
A3CF	A3 Clear Film 100mu	50	\$ 71.00	1.42
A4FGP	A4 Full Gloss Photo Paper	50	\$ 44.00	0.88
A3FGP	A3 Full Gloss Photo Paper	50	\$ 79.00	1.58
A4PH	A4 Economy Photo Paper	50	\$ 23.00	0.46
AC2	Artists Canvas	25	\$ 60.00	2.40
GC4F	Greeting Card (4 Fold)	100	\$ 28.00	0.28
GCBF	Greeting Card (BI-Fold)	100	\$ 48.00	0.48
DCCS	Double Coated Card Stock	50	\$ 24.00	0.48
GCS	Glossy Card Stock	50	\$ 24.00	0.48
TTP	T-Shirt Transfer Paper	15	\$ 15.00	1.00
MP	Magnetic Paper	25	\$ 58.00	2.32
BC1	Business Cards (10 per A4)	20	\$ 19.00	0.95



INCLUDES:
90gsm coated paper, 90gsm hi-res paper, white film, clear film, full gloss photo paper, economy photo paper, greeting card (4 fold), greeting card (bi-fold), glossy card stock, t-shirt transfer paper, business cards and magnetic paper!



New Reality's Media and Paper supplies are guaranteed to be of the highest quality found world-wide and will meet the demands of today's printers including photo realistic output printers! If you are not 100% satisfied with our paper or media supplies return them and we will cheerfully refund the full purchase price.....guaranteed!



**AUSTRALIA WIDE FREECALL
1800 680 605**



FREE AUSTRALIA WIDE DELIVERY! SAME DAY DISPATCH!!
COD * MONEY ORDER * CHEQUE * MASTERCARD * VISA * BANKCARD * AMEX



SUPERIOR PERFORMANCETM INKJET REFILL KITSTM

REFILL & SAVE AT LEAST 80% OFF PRINTING COSTS

BLACK REFILL KITS FROM ONLY \$24.90

Black kits include superior, dense & sharp black inks

DESCRIPTION (Kits Compatible with Printers listed below)	No. of Refills	Product Code
CANON BJ-30	60	20-BKL
CANON BJC-70/BJC 80	60	21-BKL
CANON BC-01/02 BJ-10E/20 BJ-200 Series & BJC-1000 Series	9	3-BKL
CANON BJ-300/330	7	4-BKL
CANON BJC-600/610/620	16	5-BKL
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BCI-21	45	19-BKL
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BC-20	9	18-BKL
CANON BJC-3000/6000/8000 Series	12	46-BKL
HP Desk Jet 400/500 Series	6	8A-BKL
HP Desk Jet 600/660/690 Series	6	8B-BKL
HP Desk Jet 700/800/900/1000 Series	8	29-BKL
HP Desk Jet 300 Series & Olivetti JP's!	8	7-BKL
EPSON Stylus 400/800/800+/1000	8	1-BKL
EPSON Stylus Colour /PRO/XL	12	2-BKL
EPSON Stylus 820/colour II/Is	12	23-BKL
EPSON Stylus Colour 200/300/400/500/600/800/850/1520	12	33A-BKL
EPSON Stylus Colour 440/460/480/640/660/700/740/760/900	12	33B-BKL
IBM/LEXMARK 4076/1000/1020/2000/2030/2050 Series	12	35A-BKL
IBM/LEXMARK 5000/5700/7000 & Z Series	12	35B-BKL
CANON, EPSON, HP Fluorescent & Photo Realistic Kits!		Please Call!

COLOUR REFILL KITS FROM ONLY \$34.90

Colour kits include cyan, magenta & yellow inks

DESCRIPTION (Kits Compatible with Printers listed below)	No. of Refills	Product Code
CANON BJC-70/80	3x30	22-CLR
CANON BJC-210/210SP/240/255/265/1000 Series	3x12	25-CLR
CANON BJC-600/610/620	3x8	10-CLR
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BCI-21	3x30	17-CLR
CANON BJC-3000/6000/8000 Series	3x8	47-CLR
HP Colour Desk Jet 300/400/500 Series & Olivetti!	3x12	14A-CLR
HP Colour Desk Jet 600C/660C/690C Series	3x12	14B-CLR
HP Desk Jet 850C/855C/870C/1000C Series	3x3	30A-CLR
HP Desk Jet 710/720/890/900 Series	3x3	30B-CLR
EPSON Stylus Colour /PRO/XL	3x4	16-CLR
EPSON Stylus 820/colour II/Is	3x12	24-CLR
EPSON Stylus Colour 200/300/400/500/600/800/850/1520	3x12	34A-CLR
EPSON Stylus Colour 440/460/480/640/660/700/740/760/900	3x12	34B-CLR
IBM/LEXMARK 4076/1000/1020/2000/2030/2050 Series	3x6	36A-CLR
IBM/LEXMARK 5000/5700/7000 & Z Series	3x6	36B-CLR
CANON, EPSON, HP Fluorescent & Photo Realistic Kits!		Please Call!

Your printer not listed? We stock Australia's largest range of printer consumables. Call now!

USING NEW REALITY'S INKJET REFILL KITS WILL NOT VOID YOUR PRINTER'S WARRANTY.

New Reality Resources has no affiliation with any printer manufacturers or OEM's and nor has any arrangement been made with them to form the basis of any statements we make.



New Reality Resources Pty. Ltd. ACN - 073 908 013 Bayside Business Park
Australia Wide FREECALL - 1800 680 605 Shop 1 / 70 Redland Bay Rd
QLD Phone - (07) 3245 2411 Fax - (07) 3245 2755 Capalaba Q 4157
VIC Phone - (03) 9878 8288 Fax - (03) 9878 3933

Dealers wanted in all states and NZ!
For more information please call.

ALL PRICES INCLUDE GST



**FREE
DELIVERY
AUSTRALIA WIDE**



**AUSTRALIA WIDE FREECALL
1800 680 605**

All brand and product names are registered trademarks of their respective owners and used solely for descriptive purposes.



FREE AUSTRALIA WIDE DELIVERY! SAME DAY DISPATCH!!
COD * MONEY ORDER * CHEQUE * MASTERCARD * VISA * BANKCARD * AMEX



FREE DELIVERY AUSTRALIA WIDE!



AUSTRALIAN COMPUTER RECYCLERS

Call
1300 727 787
221 Boundary Rd,
Mordialloc
Victoria 3195

Website: www.pcrecyclers.net Email: sales@pcrecyclers.net

ePC

- Genuine Intel Pent 133MHz CPU
- 32MB RAM expandable to 256
- 3.5", 1.44 MB Floppy Disk Drive
- 1.2 GB IDE Hard Disk Drive
- IDE CD ROM Drive
- 14" SVGA Digital Colour Monitor
- 16 Bit Stereo Sound & 120W Speakers
- Windows 3.1 and Internet Explorer
- Keyboard and Mouse
- Tested, Boxed and ready to Go!

*PLUS BONUS SOFTWARE, EXTERNAL MODEM & 100 HOURS BIGPOND INTERNET

\$499 incl GST



PLATINUM

- Genuine Intel Pent 166MHz CPU
- 32MB RAM exp to 256MB • 3.5", 1.44MB FDD
- 1.2 GB IDE Hard Disk Drive
- IDE CD ROM Drive
- 15" SVGA Digital Colour Monitor
- 16 Bit Stereo Sound Card & Speakers
- Keyboard & Mouse
- Windows 3.1 and Internet Explorer
- Tested, boxed and ready to Go!

*PLUS BONUS SOFTWARE, EXTERNAL MODEM & 100 HOURS BIGPOND INTERNET

\$599 incl GST



G-FORCE III

- Genuine Intel Pent 200MMX
- 32MB RAM exp to 256MB
- 1.7 GB IDE HDD
- 16 Bit Stereo Sound Card
- IDE CD ROM Drive
- 15" SVGA Digital Colour Monitor
- Keyboard & Mouse
- 240W Amplified 120W Speakers
- Desktop Case
- Tested, boxed and ready to Go!

*PLUS BONUS SOFTWARE, EXTERNAL MODEM & 100 HOURS BIGPOND INTERNET

\$699 incl GST



POWERHOUSE 400

- AMD K6-2 400MHz CPU
- 64MB RAM exp to 256MB
- 2.1 GB IDE HDD
- IDE CD ROM Drive
- 16 Bit Stereo Sound Card
- 2MB S3 Virge PCI Video Card
- 120W Amplified Speakers
- 15" Digital SVGA Refurbished Colour Monitor
- Midi Tower Case
- Tested, boxed and ready to Go!

*PLUS BONUS SOFTWARE, EXTERNAL MODEM & 100 HOURS BIGPOND INTERNET

\$859 incl GST



IBM 380ED

- Genuine Intel Pent 166MHz CPU
- 3.5", 1.44 MB Floppy Disk Drive
- 80MB RAM
- 3.0 GB IDE HDD
- 20X IDE CD ROM Drive
- 12.1" Active Colour Display
- 33.6 PCMCIA Fax/Modem
- Stereo Sound & 120W Speakers
- Zoom Video Port Enabled • Carry Case
- Tested, boxed and ready to Go!

*PLUS BONUS SOFTWARE, EXTERNAL MODEM & 100 HOURS BIGPOND INTERNET

\$1595 incl GST



LASER PRINTER

- Fully refurbished Lexmark Optra S1250n, network ready and well below half replacement price
- 12 Pages/Minute • 33MHz Intel Processor
- 20MB Memory (Standard 4MB)
- PostScript Level 2
- RJ45 Network Card Interface
- True 1200 x 1200 dpi
- 350-sheet Input
- Prints stock up to 300 gsm labels

\$799 incl GST



NETSERVERS

- Both Systems include:
- 32MB RAM • 3.5", 1.44MB FDD
- 4.1 GB SCSI HDD • HP 4 GB Tape Unit
- IDE CD ROM Drive • 100MB RJ45 NIC
- 14" HP Col SVGA Monitor
- Attractive Minitower Case
- S3 Integrated Video Card • Runs NT/Unix/Novell

E-30 • Genuine Intel Pentium 166 MHz CPU \$795

E-40 • Genuine Intel Pentium 200 MHz CPU \$895



3COM HUB

- Now is your chance to own a genuine 3COM 8 Port RJ45 Network Hub for a fraction of replacement cost. 100% guaranteed and better than new condition

\$89 incl GST



33.6K FAX/MODEM

- External 33.6K Fax/Modem with AC Adapter and Cable.

\$49 incl GST



MONITORS

14" \$129 incl GST

15" \$189 incl GST

17" \$329 incl GST



BONUS SOFTWARE BUNDLE

- Encyclopaedia Britannica • My First Encyclopaedia • Expert Landscape Design 3D • Expert Resume Writer
- Asymetrix Web 3D • Asymetrix Multimedia Creative Suite • Kids Zoo • A Baby Animal Adventure • Aviation Adventure
- 3 Hot Sierra Games - Cart Racing • Golf Pro '98 • Caesar II • Norton AntiVirus Gold Edition

\$1,000 WORTH OF SOFTWARE FREE!

Excluding Notebook Package - Titles subject to change without notice

* NOTEBOOK BUNDLE

- Nortons Mobile Essentials • Nortons PC Anywhere V8.0 • Free Lap Link Cable for Data Transfer!

OVER \$300 WORTH OF SOFTWARE FREE!

LOGITECH	iTouch Cordless Keyboard	\$88.00
	Deluxe Mouseman	
	Wheel Mouse Serial/USB	\$49.00
	Wingman Extreme Gamepad	\$44.00
DEXA	Wingman Attack Joystick	\$35.00
	SoundMan G1 HiFi	
	Satellite Speakers	\$44.00
	SoundMan X1 Speakers with Subwoofer	\$75.00
MEMORY	Quickcam VC Digital Camera	\$99.00
	Deluxe Two-Button Mouse	\$9.00
	Steering Wheel with Pedals	\$49.00
	360° Joystick	\$29.00
MULTIMEDIA	4MB 30Pin Fast Page	\$27.00
	16MB 30Pin Fast Page	\$88.00
	4MB 72Pin FP/EDO	\$15.00
	8MB 72Pin FP/EDO	\$33.00
NETWORKING	16MB 72Pin FP/EDO	\$77.00
	32MB 72Pin FP/EDO	\$115.00
	64MB SDRAM PC/100	\$89.00
	16bit Stereo Sound Card	\$29.70
MAINBOARDS	16bit Stereo Opti with IDE	\$35.00
	S/B Vibra 16bit Stereo	\$55.00
	120W, 240V Speakers	\$18.70
	Jazz 707 500W Timber Spks	\$110.00
PROCESSORS	Jazz 906 Sub Woofer	\$53.90
	52X IDE CDROM	\$79.00
	CD ROM Re-Writer 4X4X24	\$229.00
	Stereo Desktop Microphone	\$4.40
STORAGE HDD/FDD	ISA RJ45 Network Card	\$11.00
	ISA Combo RJ45/Coax	\$16.50
	Intel PCI 10/100 RJ45	\$42.90
	3COM PCI 100 RJ45	\$42.90
MODEMS	PCMCIA RJ45 Network Card	\$59.00
	2MTR RJ45 Network Cable	\$22.00
	Dual USB PCI Card	\$69.00
	486 PCI 3/5V upto 100MHz	\$49.00
VIDEO CARDS	Pentium AT upto 166MHz	\$59.00
	Pentium Pro Socket 8-200MHz	\$69.00
	Pentium Vx upto 200MHz	\$79.00
	Pentium TX upto 233MMX	\$99.00
STORAGE HDD/FDD	Pentium ATX LX upto 333MHz	\$129.00
	Intel 486 DX4-100 3/5Vt	\$15.00
	Intel Pentium 75MHz	\$27.00
	Intel Pentium 90MHz	\$30.00
MODEMS	Intel Pentium 100MHz	\$38.00
	Intel Pentium 120MHz	\$43.00
	Intel Pentium 133MHz	\$66.00
	Intel Pentium 166MHz	\$88.00
STORAGE HDD/FDD	Intel Pentium 166MMX	\$99.00
	Intel Pentium 200MMX	\$169.00
	Intel Pentium Pro200MHz	\$169.00
	Intel Pentium II 233MHz	\$169.00
MODEMS	Heatsink & Fan	\$13.00
	1.2MB FDD	\$11.00
	3.5", 1.44FDD	\$15.00
	1.7GB, 3.5" IDE	\$135.50
MODEMS	2.1GB, 3.5" IDE	\$165.00
	4.3 GB, 3.5" IDE	\$198.00
	15 GB, 3.5" IDE HDD	\$249.00
	2.5" to 3.5" HDD Converter	\$29.70
MODEMS	33.6K External Fax/Modem	\$49.00
	56K V.90 Internal Fax/Modem	\$58.30
	56K V.90 External Fax/Modem	\$115.50
	VLB 1MB SVGA	\$16.50
MODEMS	VLB 1MB SVGA	\$27.50
	PCI 1MB SVGA	\$27.50
	PCI 2MB SVGA	\$39.00
	PCI 4MB SVGA	\$69.00
MODEMS	PCI 8MB Trident 3D	\$129.00
	PCI 16MB Vanta 3D	\$189.00
	PCI 32MB TNT2 32MB	\$239.00

COMPONENTS

- S3 VIRGE VIDEO CARD
PCI 4MB Video Card \$69.00
- SOUND BLASTER
ISA 16 Bit Stereo Sound Card
- Original \$55.00
- 1.7GB HARD DISK
Factory Refurbished
3.5 IDE 100% OK \$135.00
- GENUINE INTEL PENT PRO 2000
Genuine and very rare CPU
still available new, the most
powerful fileserver CPU
ever built \$169.00
- ADAPTEC PCI SCSI CONTROLLER
AHA-2940S76 with auto \$99.00
- 2 USER NETWORK PACK
2 x ISA RJ45 Network Cards,
Cable and Doco's and you're
networked \$42.90

DIY UPGRADE KITS

UPGRADE THAT TIRED OLD 386/486 PC NOW

Why throw away that old 386/486 when you can upgrade it to a Pentium capable of surfing the Net and running all the applications you currently can't run, other dealers try to sell you a new monster for \$1,500 but at ACR you can upgrade from as little as \$197.00 and approx. 30 minutes of your time.



DIY PENT 133 UPGRADE \$197

- Pentium AT PCI Mainboard
- Genuine Intel Pent 133 MHz CPU
- 16 MB RAM
- Bonus 1MB PCI Video Card
- Cables and Documentation

DIY PENT 166 UPGRADE \$259

- Pentium AT PCI Mainboard
- Genuine Intel Pent 166 MHz CPU
- 32 MB RAM
- Bonus 1MB PCI Video Card
- Cables and Documentation

DIY PENT PRO 200 UPGRADES\$299

- Pentium Pro AT PCI Mainboard
- Genuine Intel Pent Pro 200 MHz CPU
- 32 MB RAM / 256 Cache
- Bonus 1MB PCI Video Card
- Cables and Documentation

DIY AMD K6/2-400 UPGRADE \$459

- Pentium TX AT PCI Mainboard
- Genuine AMD K6/2-400 MHz CPU
- 32 MB RAM
- Integrated Video Card and Sound Card
- Cables and Documentation
- Bonus 1MB PCI Video Card

All items and prices are subject to change without notice. Delivery Charges are \$10 per box or \$30 per PC to anywhere in Australia plus insurance of \$2 per \$100. E. & OE.

Shop online at www.pcrecyclers.net

üHOME
INTERNET APPLIANCES

The New Generation

The next generation of home computing TV Encoder, DVD, Modem, Local Area Network and Remote Control, allows his computer system to integrate perfectly into your hi-fi system or as a stand alone computer



Explorer
SERIES COMPUTERS

Desktop Power Plus

The fastest of our range of computers featuring larger and more powerful components with DVD & CDRW, High Performance 3D Video and Sound and Super High Resolution Monitor



HIGHLANDER
LCD COMPUTER

The LP-200C series computer is the next logical step in evolution of the desktop pc.

Powerful & perfectly sized

Smart & advanced

All-in-one design

Rich Multimedia Presentation on a 15" LCD screen

Ultra high-speed graphic

process with 16mb (SMA) & full 3D 4x AGP support

Powered by Intel® Pentium® processor Built-in Ethernet 10/100 & 56k bps Modem module One touch on-line by Intrenet Hot Keys



proudly distributed by

PC Club
AUSTRALIA

www.pc-club.com.au

HIGHLANDER
SERIES NOTEBOOK
342 SERIES

SIMPLY LIGHTER
ENHANCED VALUE

Slim & Light
Weight 2.2kgs.

Solidity featured
by aluminium-
Magnesium Covers

Powerful Mobile Intel®
Pentium® III CPU

Built-in 56k bps Modem.

Swappable media bay with
optional DVD-ROM / CD-ROM



Ultra-portable Performance

HIGHLANDER
SERIES NOTEBOOK
68/38 SERIES

All-in-one design

Precised & advanced
High Quality performance

Rich Multimedia Presenting
by 14.1" or 13.3" screen

Ultra high-speed graphic
process with 16mb (SMA)
& full 3D 4x AGP.

Built-in Ethernet 10/100 &
56k Bps Modem module.

Powered with Intel® Pentium® CPU.

One touch on-line by intrenet Hot Keys.



HIGHLANDER
SERIES NOTEBOOK
73 SERIES

High Performance &
advanced All-in-one design

Ultra high-speed graphic process

Multimedia Presentations on
15" screen

With 8mb SDRAM & full 3D
4x AGP support

Powered with Mobile Intel®
Pentium® CPU

Built-in Ethernet 10/100

Built-in 56k bps Modem module

One touch on-line by
internet Hot Keys



Large 15" Display

phone 9736 2688

forte

COMPUTERS

We give you
FLEXIBILITY



Quatro P4

Intel PENTIUM 4 processor
MSI 850 Pro M/board ICH2 chipset
256m RDRAM, 800mHz
30GB U-100 7200 Hard Disk
1.44 Floppy Disk
44 x CD ROM Player
32m Geforce II Mx Video Card
Pentium 4 Midi Tower Case
Microsoft Internet Keyboard
Microsoft Intellimouse
Internal 56K V90 Fax/Modem
Audio ICH2 chip integrated
Atec Lansing ACS 233-3P Spkr & sub woofer
Win ME on CD (OEM)
2 years limited ON-SITE Warranty



HITACHI 17" TFT Screen
Cm 170 \$2800
with system purchase



P4 1.4Gig \$2140
P4 1.5Gig \$2350
P4 1.7Gig \$2600



MSI
Motherboards
"Connecting Peripherals"

forte Palladium 5 Series* forte Platinum 5 Series* forte Titanium 5 Series* forte Selenium 5 Series*

- Genuine Intel Processor
- MSI 815EP Pro S370, 815 chipset, Audio
- 64Mb SDRAM PC 133
- 10Gb Ultra 100 IDE HDD
- 1.44Mb 3.5" Floppy Drive
- On-Board Trident 2d/3d Video
- 250W ATX Midi Tower Case
- 104-Key Windows PS/2 Keyboard
- A4+ Ps2 Mouse
- 44X CD-Rom Drive
- On-Board Audio
- 180W PMPO Stereo Speakers
- 56K V90 Internal Modem
- NO SOFTWARE WITH THIS



Hitachi Cm615 \$385
with system purchase

Cel-733	\$800	Cel-733	\$1,625	Duron-800	\$1,390	Athlon 1 gig	\$2,060
Cel-766	\$860	Cel-766	\$1,695	Duron-850	\$1,425	Athlon 1.1gig	\$2,090
PIII-866	\$1025	PIII-866	\$1,855	Athlon 900	\$1,525	Athlon 1.2gig	\$2,110
Cel-933	\$1096	PIII-933	\$1,925	Athlon 1gig	\$1,525	Athlon 1.3gig	\$2,200
PIII-1gig	\$1175	PIII-1gig	\$1,995	Athlon 1.1 gig	\$1,625		



HITACHI

Inspire the Next



HITACHI 19"
Flat Screen
Cm772
\$950*



HITACHI 19"
Cm771
\$850*



HITACHI 17"
Flat Screen
Cm625
\$540*



HITACHI 15"
TFT Screen
Cm 151
\$1480*



HITACHI 21"
Cm811+
\$1595*

Terms & Conditions All prices include 10% GST and are subject to our full terms and conditions of sale, a copy of which is available upon request or on our website. Prices are valid until 21st June 2001 and are subject to change without notice. Check our website for updated prices. **Ordering and Payment.** Ordering can be done by telephone, fax, e-mail or buy direct from our secure website. We accept Cash, Direct Deposit or Bank Cheque, Credit Card, cheques, and EFTPOS transactions may attract a surcharge. Cheques and Direct Deposits need 3 days for clearance. **(National Australia Bank, Strathfield, NSW, BSB 082 451 Account No 633 065 162)** **Delivery** Under 3kg Australia-wide \$13.20, Sydney Metro up to 20kg \$22 Other areas or interstate please call for charges. **Warranty & Return.** Forte Systems (servers excluded) carry 2 years limited on-site warranty. Third party devices carry manufacturers warranty. It is the customers obligation to ensure that the correct goods are ordered. Please obtain an RA number before returning goods. Returned goods must be unopened and well packaged for return within 7 days of receipt, and accompanied by a copy of the invoice. Refunds will be given less a 20% restocking fee if not faulty. Delivery fee and insurance costs are to be borne by the customer. Pictures in this ad are for illustration purposes only. Trademarks & logos are the property of the respective owners. Errors & omissions excepted

ORDERLINE 1300 368 922

Tel: (02) 9715 2911 **Fax:** (02) 9715 1067 **Service:** (02) 0715 7399 **Order Tracking** (02) 9744 6177

WEB SITE www.fortecomputers.com.au **EMAIL** sales@fortecomputers.com.au

ADDRESS 101-105 Parramatta Rd, Concord, NSW 2137

Trading Hours Mon to Friday 9am-6pm, Sat 9am-2pm

BRANCH SHOP R6, 320 Pitt St, Sydney, NSW 2000. **Tel:** (02) 9267 9494 **Fax:** (02) 9267 9495 **HOURS** Mon-Fri 9am-6pm, Sat 9am-1pm

PROCESSORS

Intel Celeron 733A (oem) (S370)	\$199
Intel Celeron 766A (oem) (S370)	\$207
Intel Celeron 800A (oem) (S370)	\$249
Intel Celeron 850A (oem) (S370)	\$370
Intel Pentium III-666/133 (S370)	\$411
Intel Pentium III-933/133 (S370)	\$480
Intel Pentium III-1000/133 (S370)	\$554
Intel Pentium 4-1.3GHz	\$652
Intel Pentium 4-1.4GHz	\$701
Intel Pentium 4-1.5GHz	\$860
Intel Pentium 4-1.7GHz	\$1,049
AMD Duron 700 (oem) (Socket A)	\$106
AMD Duron 750 (oem) (Socket A)	\$110
AMD Duron 800 (oem) (Socket A)	\$139
AMD Duron 850 (oem) (Socket A)	\$163
AMD Athlon K7-900T 3D (oem) (Socket A)	\$276
AMD Athlon K7-950T 3D (oem) (Socket A)	\$343
AMD Athlon K7-1000T 3D (oem) (Socket A)	\$392
AMD Athlon K7-1100T 3D (oem) (Socket A)	\$371

MOTHERBOARDS

Biostar M7VKB (VIA, Soc-A, Audio)	\$259
Transcend AVD1 (VIA, Slot-1, PC133)	\$145
Abit VP6 (VIA, S370, U-100, RAID)	\$343
Abit KT7A (VIA, Soc-A)	\$323
Abit KT7A-RAID (VIA, Soc-A, U-100 RAID)	\$370
Abit VL6 (VIA, S370, U-66, AGP 2x)	\$153
Abit SA8R (B15, S370, RAID, 4x U-100)	\$301
Acron M04 (VIA, S370, Audio, M-ATX, 133)	\$189
Acron M05 (B15, S370, M-ATX, A4+One)	\$296
Acron AX35 (B15, S370, VGA, Audio, U-100)	\$261
Acron K13 (VIA, Soc-A, Audio, AGP 4x)	\$234
Acron M03 (VIA, Soc-A, ATX, Audio, AGP 4x)	\$218
Asus A7V (VIA, Soc-A, U-100)	\$261
Asus A7V133 (VIA, Soc-A, U-100) (Raid)	\$341
Asus K7V-T (VIA, KX133, Slot-A, U-66)	\$296
Asus A7A266 (Soc-A, U-100, AGP Pro 4x)	\$393
Asus A7M266 (VIA, Soc-A, U-100)	\$413
Asus P4T (with Free 256 SDRAM)	\$962
Asus P4T-M (B15, U-100, AGP Pro 4x)	\$1,056

FIC A231 (VIA, Soc-A, Audio, M-ATX, U-66)	\$271
Intel BOX8650GB Garibaldi Board for P4	\$446
Gigabyte GA-72X-R (VIA, Soc-A, Audio, ATX)	\$251
Gigabyte GA-72X-R (RAID)	\$337
MS 850 Pro (B50, Soc-A23, Agp 4x, Audio)	\$409
MSI 815EP Pro (B15, S370, Audio, U-100)	\$244
MSI K7T Pro 2A (VIA, Soc-A, Audio) OEM	\$240
MSI PRO 266 Master R (Pro266, S370)	\$354
MS K7T Pro 266 (VIA, Soc-A, K266, Audio, ddr)	\$363
MS 815E Pro (B15, S370, VGA, AGP 4x, Audio)	\$222
MS K7Master-S (Server, Dual, S370, U100)	\$634

MEMORY

128MB PC133 SDRAM 168pin (oem)	\$67
256MB PC133 SDRAM 168pin (oem)	\$151
128MB SDRAM PC150 168pin (oem)	\$124
256MB SDRAM PC150 168pin (oem)	\$254
128MB PC133 SDRAM ECC 168pin	\$172
256MB PC133 SDRAM ECC 168pin	\$241
64MB Rambus RDRAM RIMM 800MHz ECC	\$296
128MB Rambus RDRAM RIMM 800MHz ECC	\$436
256MB Rambus RDRAM RIMM 800MHz ECC	\$604

Call for the most updated pricing!
Memory for Brand Name Notebook & Desktop, call 1300 368 922

HARD DISKS - IDE

20GB Seagate Barracuda 2M 7200	\$219
30GB Seagate Barracuda 2M 7200	\$265
40GB Seagate IBM Deskstar U-100 2M 7200 3663	\$265
60GB 75GXP IBM Deskstar U-100 2M 7200 3687	\$487
75GB 75GXP IBM Deskstar U-100 2M 7200 3651	\$519
10GB Quantum FB LCT20 U-100	\$180
20GB Quantum FB LCT20 U-100	\$189
30GB Quantum FB AS U-100 2M 7200	\$253
30GB WD Caviar U-100 7200	\$234
30GB WD Caviar U-100 7200	\$277
40GB WD Caviar U-100 7200	\$350

HARD DISKS - NOTEBOOK

10GB Hitachi 9.5mm	\$323
12GB Hitachi 9.5mm	\$346

10Gb 20GN IBM Travelstar U-66 9.5mm	\$263
20Gb 20GN IBM Travelstar U-66 12.5mm	\$402
30Gb 30GT IBM Travelstar U-66 12.5mm	\$851

HARD DISKS - SCSI

8.1Gb Fujitsu U-160 7200rpm MC	\$391
18.2Gb Fujitsu U-160 10000rpm	\$598
9Gb Quantum Atlas V U-160 LVD68	\$371
18Gb Quantum Atlas V U-160 LVD68	\$513
36Gb Quantum Atlas 10K II U-160 LVD68	\$1,000
73Gb Quantum Atlas 10K II U-160 LVD68	\$2,581
9.2Gb Seagate Barracuda LVD68	\$423
18.4Gb Seagate Barracuda U-160 LVD68	\$514
36.4Gb Seagate Barracuda U-160 LVD68	\$813
9.2Gb Seagate Cheetham LVD68 10,000rpm	\$469
16.4Gb Seagate Cheetham LVD68 10,000rpm	\$531
18Gb Seagate Cheetham LVD68 15,000rpm	\$559
9Gb IBM Ultrastar 36LZX U-160 10K LVD68	\$410

FDD & STORAGE DEVICES

1.44MB, 3.5 Floppy Disk Drive	\$27
LS120 SuperDisk Ext. USB (Mac)	\$305
100MB 100M Zip Ext. USB	\$183
100MB 100M Zip Media	\$25
100MB 250M Zip Ext. USB	\$420
100MB 250M Zip Media	\$30
100MB 250M Zip Ext. SCSI	\$556
100MB 250M Zip Media (3 Pack)	\$546
ORB 2GB Int. IDE Drive (retail)	\$331
ORB 2GB IDE Media	\$531
ORB 5.7GB Int. IDE Drive	\$620
ORB 5.7GB Ext. Firewire Drive	\$862

VIDEO & GAMES CARDS

4M Eagle Trident AGP VGA Card	\$48
8M Eagle Trident AGP VGA Card	\$52
16M Eagle TNT2 Vanta AGP	\$92
32M Eagle TNT2 Vanta AGP	\$99
32M TNT2 M64 AGP w/ TV Out	\$129
32M TNT2 M64 PCI (Retail)	\$129
32M TNT2 M64 PCI w/ TV Out	\$150
32M Eagle GeForce II MX	\$193
16M Diamond S3 Savage Pro 307 TV Out (oem)	\$114

32M Asus V7100 GeForce II MX TV Out	\$261
32M Asus V7700 GeForce II GTS DDR Deluxe	\$519
64M Asus V7700 GeForce II GTS DDR Pro \$748	
64M Asus V7700 GeForce II GTS DDR TV Tuner \$794	
64M Asus V7700 GeForce II GTS DDR Ultra \$1,043	
ASUS GeForce II U8200 DELUXE	\$974
Xpert 98 MB AGP (oem)	\$85
Xpert 2000 32MB AGP (oem)	\$138
32M Radeon DDR AGP LE Version (oem)	\$232
32M ATI Rage Fury Pro AGP VIVO (oem)	\$214
32M Radeon DDR VE Dual Head (Retail)	\$325
64M ATI Rage Fury MAXX AGP	\$258
32M ATI All-in-Wonder 128 PCI (Retail)	\$453
32M ATI All-in-Wonder 128 Pro AGP (Retail)	\$453
64M ATI Radeon DDR VIVO AGP (Retail)	\$336
32M Creative Blaster GeForce II GTS	\$514
64M Creative Blaster GeForce II Ultra	\$908
32M Leadtek WinFast GeForce II MX 200 (oem)	\$169
64M Leadtek WinFast GeForce II GTS TV Ultra	\$978
32M Millennium G400 Dual Head MAX (retail)	\$508
16M Millennium G400 Marvel TV/DVD (retail)	\$756
Elisa 3D Revelator Glasses (Wireless)	\$167
32MB Hercules 3D Prophet II MX	\$225
64MB Hercules 3D Ultra (with TV out + DVI out)	\$909
32MB 3D Prophet 4000 XT PCI	\$188
64MB 3D Prophet 4500 XT PCI	\$370
30 Prophet III (TV Out & DVI Out)	\$1,003
32M 3Dlabs Oxygen VX1 Glint R3 AGP	\$479
32M 3Dlabs Oxygen VX1-1600SW PCI	\$888
32M 3Dlabs Oxygen VX1 Stereo AGP	\$1,068

MONITORS

DAEWOO 523X	\$251
Compaq S510 15"	\$251
Mitsubishi D7700 17", 27"	\$374
Mitsubishi D7700 19"	\$374
Agf 771 17", 27" 1280x1024 60Hz	\$364
Fujitsu 17", 1280x1024 60Hz	\$367
KDS 17" Flat Monitor	\$370
Auriga ColorPro 17D, 17.25" (Flatron)	\$550

Hitachi CM15 17", 24" 1280x1024	\$395
Hitachi CM15 17" (Flat Trinitron)	\$552
Hitachi CM15 19", 22" 1600x1200	\$740
Hitachi CM15 21", 22" 1600x1280	\$1,639
Hitachi CM15 21", 22" 1600x1280	\$1,768
LG SW777N Studioworks 17"	\$396
LG 795PT Flatron 0.25 17"	\$677
LG 995E Studioworks 19"	\$850
LG 77M MultiMedia Studioworks 17"	\$623
NEC V821 19" Monitor 1600x1200	\$715
Sony E220 17", 24"-25" (Flat Trinitron)	\$721
Sony G520 21", 24" (Flat Trinitron)	\$1,234
Sony G520 21", 24" (Flat Trinitron)	\$2,063
Viewmaster MP700 17", 27" 1280x1024	\$364
Viewsonic E70-3 17", 27" 1280x1024	\$380
Viewsonic E790 19", 26" 1600x1280	\$625

LCD MONITORS

Acer FP450 14 LCD	\$1,010
Hitachi CML191XW 15 TFT Monitor	\$1,515
"Hitachi CML1705XW 17 TFT Monitor	\$2,846
Xerox 15 active TFT	\$1,170
LG 15 SWS70LS LCD Monitor	\$1,724
Keycorp 12.1 DSTN Monitor	\$899
Mitsubishi TFT 15 DV150 1024x768	\$1,621
NEC 15 LCD1510V+ Monitor 1024 x 768	\$2,417
Sony 15 SDDMM5+ TFT Monitor	\$2,306
Viewsonic 15 LCD VE150 1024x768	\$1,663

CASINGS

Deluxe Mid Tower ATX 250W	\$61
Deluxe Mid Tower ATX 300W (For P4)	\$78
Acron Full Tower ATX K745	\$89
Acron Full Tower ATX HX06	\$199
Intel Chassis for Pentium 4	\$303
Macase Mid Tower ATX KA-800W 300W	\$139
Macase Mid Tower ATX KA-800W 300W	\$149
Macase 8-Bay Ext. SCSI-0 CDRom tower	\$372
750 SuperCD 500 Slot1/2 Server Chassis	\$497
801 SuperCD Deluxe Dual PIII/Case Chassis	\$987
250W ATX Power Supply	\$44

PROVIDING FULLY INTEGRATED COMPUTING SOLUTIONS

- Hardware & Software
- ON-Site service Sydney Metro & Australia Wide
- Web design & hosting: fully integrated client specific E-commerce packages

- Local Area Network - Wide Area Network
- Virtual Private Network (VPN) - Remote access & Data Management, Citrix Meta Frame 1.8A, Windows 2000 Server

300W ATX Power Supply	\$80
KEYBOARDS & MICE	
Acer AccuFeel Keyboard PS/2	\$23
Honeywell Eurobond M-Media Din-58/PS2	\$65
Logitech Cordless Touch	\$108
Logitech Touch Keyboard w/ 2 USB Ports	\$108
Logitech Class Keyboard + Mouse (oem)	\$137
Logitech Class Freedom Pro (Kb + Mouse)	\$220
Microsoft Internet Keyboard PS/2 (oem)	\$49
Microsoft Internet Keyboard Pro (oem)	\$67
Logitech Wheel Mouse PS/2 (oem)	\$42
Logitech Wheel Mouse USB (oem)	\$40
Microsoft IntelliMouse PS/2 (oem)	\$44
Microsoft IntelliMouse Optical USB/PS/2 (Retail)	\$60
Microsoft IntelliMouse Explorer USB/PS/2 (oem)	\$74
CD ROM & DVD ROM	
44x IDE ATAPI CD-ROM Drive	\$67
52x Creative IDE CD-ROM Drive	\$80
52x LG IDE CD-ROM Drive	\$70
24x Teac PCMCIA External (Notebook)	\$319
CD REWRITERS	
Plextor 16x10x40 IDE + Soft + Media	\$745
Plextor 12x10x32 SCSI + Soft + Media	\$769
HP 9140 (8x4x32) IDE	\$324
HP 9600A (12x6x32) SCSI	\$709
HP 8230e (4x4x6) Ext USB	\$534
Acer 10x6x32 IDE + Soft + Media	\$277
Acer 4x4x6 Ext USB	\$451
Rioch 7125A (12x10x32) IDE K2	\$387
Rioch 9120A (12x10x32) IDE DVD-CRW	\$534
Creative 12x10x32 with Burn Proof (Retail)	\$373
Sony 160x (12x6x32) SCSI Bare Drive (OEM)	\$434
Sony 160x (12x6x32) IDE Bare Drive (OEM)	\$361
Panasonic (8x4x32) IDE + Soft (OEM)	\$349
Imega Zip (4x4x6) Ext USB	\$561
Imega Zip (4x4x6) Ext USB	\$420
Yamaha (8x4x6) SCSI + Soft + Media	\$439
Yamaha (16x10x40) SCSI + Soft + Media	\$596
Yamaha (8x4x6) Ext Firewire + Soft + Media	\$508
Adaptec EZCD Creator (OEM)	\$62
Adaptec Toast V3.5.2 (Macintosh)	\$176
SOUND CARDS	
Eagle 16 bit ESS 1638	\$27
Sound Blaster Vibra 128 (oem)	\$46
Sound Blaster PCI-128 2-Channel (oem)	\$55
Sound Blaster LIVE (oem)	\$112

Sound Blaster LIVE DE 5.1	\$188
Sound Blaster LIVE Platinum 5.1	\$449
GUILLOTIN MAXI SOUND/USB (Retail)	\$78
Diamond Monster Sound MX400 (oem)	\$110
Guillemot Maxi Fortissimo	\$82
SPEAKERS	
Altec Lansing ACS22 - 2p	\$45
Altec Lansing ACS23 - 3p	\$79
Altec Lansing ACS45, 1 Power Cube - 3p	\$165
Altec Lansing ATP3 Flatpanel - 3p (multi-chn)	\$207
Creative Speaker Stand (Surround Station)	\$149
Cambridge PCWorks 3-p	\$78
Cambridge FPS1000 4-p Surround	\$152
Cambridge FPS1500 4-p Surround Digital	\$185
Cambridge FPS2000 4-p Surround Digital	\$368
Cambridge DTT2500D 6-p Desktop Theater	\$250
Logitech SoundMan S-20	\$108
Yamaha YST70 Digital Surround Speakers	\$116
Yamaha YST1000 Surround Speakers	\$210
Yamaha YST.MS30 Subwoofer + Speakers	\$123
Yamaha YST.MS55 Sub + Speakers USB	\$263
PRINTERS	
Acer Fotoprinta 300P	\$314
Brother HL-1240 12ppm 2M Laser	\$505
Brother HL-1250 12ppm 4M Laser	\$640
Samsung ML-4500 8ppm 600dpi	\$431
Canon BJC-55 Portable (incl. Scanner)	\$627
Canon BJC-85 Portable	\$345
Canon BJC-1000SP	\$107
Canon BJC-2100SP 5ppm	\$144
Canon BJC-3000	\$203
Canon 5400	\$214
Canon 5800	\$593
Canon BJC-6500 8ppm (1440x720) (A3)	\$656
Epson Stylus Color 680 (1440x720)	\$144
Epson Stylus Color 580 (1440x720) (USB)	\$162
Epson Stylus Color 680 (2880x720) (USB)	\$281
Epson Stylus Color 880 (2880x720) (USB)	\$430
Lexmark Z11 Colour (1200x1200)	\$132
Lexmark Z31 Colour (1200x1200)	\$162
Lexmark Z32 Colour (1200x1200)	\$166
HP DeskJet 350CBI (Portable)	\$540
HP DeskJet 640C	\$127
HP DeskJet 840C	\$174
HP DeskJet 930C	\$270
HP OfficeJet 725 4 in 1	\$548

HP OfficeLaser 3150 4 in 1	\$1,156
*HP LaserJet 1100 8ppm	\$708
Kyocera FS-1000	\$593
Kyocera FS-1200	\$879
Panasonic KX-P6100	\$308
Xerox DocuPrint P85 8ppm	\$415
16MB Memory Upgrade for P85	\$99
Xerox DocuPrint P1210 12ppm	\$703
Xerox WorkCentre 365 4-in-1 Laser	\$966
Acer 6205 SCSI (600x1200)	\$161
Acer 640U USB (600x1200)	\$126
Acer ScanWit 2720S Film Scanner	\$614
Agfa Snapscan E20 USB (600x1200)	\$213
Agfa Snapscan E40 USB (1200x2400)	\$345
Mitsubishi DV648U USB (600x1200)	\$102
Mitsubishi DV648U USB + TPO (600x1200)	\$219
Umax Astra 2100U 36-Bit (600x1200)	\$113
Canon CanoScan N300P (300x600)	\$86
Canon CanoScan N640P (600x1200)	\$138
Canon CanoScan N650U USB (600x1200)	\$179
Canon CanoScan F1320U USB (1200x2400)	\$441
Epson Perfection 640 USB (600x2400)	\$280
Epson Perfection 1200 USB (1200x2400)	\$458
Fujitsu 3091 CD	\$1,241
HP ScanJet 3300C USB	\$192
HP ScanJet 5300C USB	\$367
Plextek OptiPro U12B (600x1200) USB	\$122
Plextek OptiPro U12B (600x1200) USB	\$169
Microtek V8 USB A4 48-Bit USB&SCSI	\$375
Microtek ScanMaker 4000 (1200x2400) USB	\$395
Microtek X12 USB (1200x2400) USB&SCSI	\$584
Microtek ScanMaker 4 SCSI (Trans)	\$1,279
MODEMS	
56K V90 Fax Modem Internal Web Excel	\$49
56K V90 Fax Modem Ext. Topline Dynalink	\$97
Netcomm InModem 56K V90 Int. PCI (Retail)	\$81
Netcomm Roadster II 56K V90 Ext. (oem)	\$181
3Com USR Fax Modem 56K Ext.	\$230
3Com USR Voice Modem 56K Ext.	\$294
Paradise Wavecom 56K Pro	\$180
Swann Speed Demon Internal Modem	\$58
Swann Smart II External Modem	\$185
Dynalink ALE070 USB ADSL Modem	\$389
LightSpeed 56K Rockwell PCMCIA Modem	\$121
Xircom RealPort CardBus 56K WinGlobal	\$341

Xircom CreditCard Modem 56K	\$354
SwannSmart II 56K PCMCIA	\$160
3Com 10100 LAN + 56K Modem PC Card	\$453
3Com 10100 LAN + 56K Modem CardBus Xjack \$484	
Xircom RealPort E'net 10 + 56K	\$648
Xircom RealPort E'net 10/100 + 56K	\$737
DIGITAL CAMERAS	
Umax AstraCam 640x480 4MB USB	\$274
Agfa ePhoto CL16 640x480 2MB USB	\$309
Canon PowerShot A50	\$1,068
HP PhotoSmart 520	\$846
Epson Photo PC700 1280x960 + 14Mb	\$1,003
Canon EZ-300	\$290
Sony Mavica MVCFD85 Digital Camera	\$1,398
TU TUNERS	
Dynalink TV Tuner PCI + FM Radio	\$138
Hauptpage WinTV GO PCI	\$164
Miro Media PCTV PRO	\$374
Miro Media PCTV USB	\$333
Averkey Pro PC-TV Converter 800x600	\$303
VIDEO CONFERENCE CAMERA	
Kodak VYC-WetCam Go Plus	\$301
Kodak DVC-325 Digital Video Camera USB	\$157
Logitech QuickCam Express USB (oem)	\$90
Logitech QuickCam Pro Parallel	\$223
Logitech QuickCam Pro USB	\$223
Logitech QuickCam Pro 3000	\$254
Logitech QuickCam VC USB	\$189
Logitech QuickCam Web	\$187
VIDEO CAPTURE CARDS	
Pinnacle Micro Studio DC10 +	\$559
Pinnacle Micro Studio DV	\$306
Pinnacle Micro Studio DV Plus	\$544
Mediator Pro	\$597
32M Matrox HT2000 Kt	\$2,626
Canopus EZDV	\$564
Canopus EZDV Plus w/ Live!d MSP-6	\$752
Canopus OV510m w/ Internal Bay (No Prem)	\$3,254
CONTROLLER CARD	
Dual EPP Parallel Port ISA Card	\$25
Single EPP Parallel Port ISA Card	\$35
Dual Serial Port ISA Card	\$40
Dual Serial Port ISA Card	\$41
Single Printer Port PCI Card	\$67
IDE CARD	



First technology Co Pty Ltd
Providing Tomorrow's Computers Today!

Maximum Performance & Reliability in a name you can Trust.

With eight stores throughout Brisbane, the Gold Coast and Sydney, First Technology Co-operation has become well known in the tough Personal Computing Industry and we continue to strive with quality brands.

Not only do we supply hi-quality reliable products, FTC provides expert pre-sale and after-sale service, as customer satisfaction is our team's number one priority. FTC offers a large product range from stand-alone systems for home-based solutions, through to large and complex network solutions for any size business.

Call us to find out just how easy it is to deal with a name you can really trust.



Why not Flexirent? Flexirent works just like a mobile phone plan and is the best and simplest way to finance computer and office equipment whether for the home, small business or larger business's.

Flexirent gives you the flexibility to 'trade-up' your computer as technology changes, so you can always stay up to date with the latest equipment!



Flexirent
The best way to finance technology

NO DEPOSIT
Just the first month's rental

TAX DEDUCTIBLE
If the equipment is used mainly for business

EASY UPGRADES
Keep pace with technology

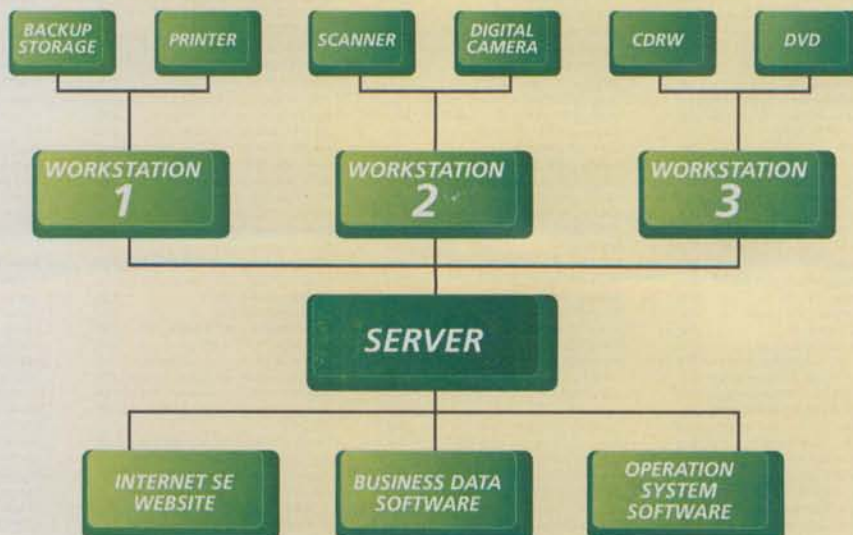
MORE OPTIONS
Offer to purchase at the end of term

INCLUDE SOFTWARE
and peripherals

Business Networking Packages

Today's technology enables users to have a new level of networking structure.

Whether you're a large corporation or a small business, First Technology Co-operation can customize a networking package to suit your individual needs. Ranging from Local Area Network to Wide Area Network solutions and with optional on-site service, we make connecting computers a breeze. First Technology Co-operation, providing integrated computer solutions at an affordable price.



24HR ONLINE SHOPPING (SYSTEMS & PERIPHERALS) www.ftc.com.au

Budget Workstation

- Intel Celeron 766 MHz CPU
- Pentium III 133MHz Motherboard
- 128mb 133MHz SDRAM
- 20GB Hard Disk Drive
- 1-16mb Onboard Video
- 1.44mb Floppy Disk Drive
- ATX Case With 250W Power
- 44x CD ROM Drive
- 32Bit Sound Onboard
- SP-701 Stereo Speakers
- 15" Digital Monitor
- PS/2 Keyboard & Mouse
- 56k Internal V90 Modem
- 50 Hours Internet Access
- Microsoft Windows ME
- 5 Years Ltd Warranty

\$1399 INC GST

Flexirent
The best way to finance technology
\$15.23 w per week over 36 months

Illustrative purposes only

Family Multimedia

- Intel Pentium III 866 MHz CPU
- Pentium III 133MHz Motherboard
- 128mb 133MHz SDRAM
- 30GB Hard Disk Drive
- 1-16mb Onboard Video
- 1.44mb Floppy Disk Drive
- ATX Case With 250W Power
- 50x CD ROM Drive
- 32Bit Sound Onboard
- SW-2201 Speakers Subwoofer
- 15" Digital Monitor
- PS/2 Keyboard & Mouse
- 56k Internal V90 Modem
- 50 Hours Internet Access
- Microsoft Windows ME
- Microsoft Works Suite 2001
- (Word 2000, Works 2000, Money 2000, Atlas 2000, Picture Publisher)
- Canon BJC-1000 Inkjet Printer
- 5 Years Ltd Warranty

\$1999 INC GST

Flexirent
The best way to finance technology
\$20.31 w per week over 36 months

Illustrative purposes only

Marketing Extreme

- Intel Pentium 4 1.4GHz CPU
- Pentium 4 i850 400FBS Motherboard
- 128mb PC800 RDRAM
- 40GB 7200rpm Hard Disk Drive
- 32mb GeForce II MX Video
- 1.44mb Floppy Disk Drive
- ATX Case With 300W Power
- 32x10x8 CD Rewritable Drive
- 12x DVD Drive (40x CD ROM)
- Creative Vibra 128 3D Sound Card
- SP-280 Speakers Subwoofer
- 17" LG Digital Monitor
- PS/2 Internet Keyboard & Mouse
- 56k Internal V90 Modem
- 50 Hours Internet Access
- Microsoft Windows ME
- 5 Years Ltd Warranty

\$2999 INC GST

Flexirent
The best way to finance technology
\$29.54 w per week over 36 months

Illustrative purposes only

EVERYTHING YOU NEED IS AT FTC.

Memory

32mb PC-100 SD RAM	CALL
64mb PC-133 SD RAM	CALL
128mb PC-133 SD RAM	CALL
256mb PC-133 SD RAM	CALL

Hard Disk Drive

10Gb / 20Gb	\$179 / \$189
30Gb / 40Gb	\$229 / \$259
20Gb / 30Gb 7200rpm	\$229 / \$279
40Gb / 60Gb 7200rpm	\$359 / \$469
18Gb IBM 10000rpm SCSI	\$619
36Gb IBM 10000rpm SCSI	\$1,119

Motherboard

J-630CN ATX, VGA, Audio	\$169
ABIT V6 II 4x AGP 133MHz	\$189
ABIT SA6 Intel 815EP Audio	\$249
ABIT SA6R Intel 815EP Audio	\$309
Asus CUSL2-C 4x AGP 815E	\$279
Asus CUSI-M VGA, Audio, Lan	\$179

Video Card

S-Media SV450 M64 32mb	\$109
S-Media SV454 Savage4 16mb	\$89
S-Media SV455 GeForce II 32mb	\$189
Eagle Riva TNT2 M64 32mb	\$129
Eagle GeForce II MX 32mb	\$179
Eagle GeForce II MX 64mb	\$229

Monitor

LG 15" 552V .28 1024x768	\$269
LG 15" 550M .28 1024x768-Multimedia	\$299
LG 17" 775N .27 1280x1024	\$379
LG 19" 995E .26 1600x1200	\$769
Acer 17" 77c .27 1280x1024	\$379
Acer 17" 77v .25 Flatron Screen	\$599

CD ROM, DVD, CD-RW

44x / 50x / 52x CD ROM	\$69 / \$75 / \$79
12x / 16x DVD	\$139 / \$179
Acer 32x10x8 with Adaptec-4mb Buffer	\$259
Acer 32x12x8 with Adaptec-4mb Buffer	\$289

Network Card & Hub

ISA & PCI 10 Base	\$29
PCI 10 / 100 Base	\$39
PCMCIA 10 / 100 Base	\$79 / \$129
4 Port USB Hub	\$59
8 Port With BNC 10Mbps Hub	\$79
8 Port 10 / 100 UTP Hub	\$149
Logitech Internet Camera	\$99

FDD & Zip Drive

1.44mb / LS-120mb Drive	\$29 / \$169
1.44mb / LS-120mb Disk	\$5 / \$23
Zip 100mb Int / Ext / USB	\$119 / \$209 / \$239
Zip 250mb Int / Ext / USB	\$209 / \$359 / \$419
Zip 100mb / 250mb Disk	\$23 / \$33

Memory Card

SmartMedia 8/16/32 mb	\$49 / \$69 / \$99
SmartMedia 64/128 mb	\$189 / \$499
CompactFlash 8/16/32 mb	\$59 / \$79 / \$109
CompactFlash 64/128 mb	\$189 / \$399

Printer

Canon BJC-1000SP	\$109
Canon BJC-2100SP	\$139
Canon BJC-6200	\$269
Canon BJC-6500	\$629
Canon BJC-5800	\$589
Canon BJC-5400	\$229
Canon LBP-800 Laser	\$499
Canon LBP-1000 Laser	\$1,119
Epson Stylus 480 / 580	\$149 / \$179
Epson Stylus 680 / 880	\$279 / \$449

Scanner

Canon 340P / 640P	\$119 / \$149
Canon N650U (600x1200)	\$189
Canon D660U Film Scan	\$289
Canon N1220U (1200dpi)	\$289
HP 3300C / 4300C	\$139 / \$189
HP 5300C	\$379
Acer 620UT Transparency	\$299

ABIT

acer

ASUS

Canon

CREATIVE

IBM

LG

Microsoft

Quantum

BRISBANE

HEAD OFFICE -
FORTITUDE VALLEY
2/57 James Street
Ph 07 3216 0885

TOOWONG

Shop F27 Toowong Village
Ph 07 3871 3066

CAPALABA

Shop 51 Capalaba Park Centre
Ph 07 3823 1022

SPRINGWOOD

Shop 9, 18-28 Fitzgerald Ave
Ph 07 3290 4355

SUNNYBANK

Shop 79B Sunnybank Plaza
Ph 07 3344 7100

SYDNEY

CBD
283 Clarence Street
Ph 02 9266 0699

GOLD COAST

BURLEIGH
Shop 55 Burleigh Town
Market Place
Ph 07 5520 4732

BUNDALL

Shop 33 Benowa Gardens
Ph 07 5597 5486

FTC

Providing Tomorrow's
Computers Today

† 5 year limited (return to base) warranty on all system packages sold. See stores for details, conditions apply.

*Flexirent payments quoted are based on a 36 month commercial rental agreement or consumer lease, payable monthly. Rental payments include GST. Conditions apply. Subject to credit approval.

TELEPHONE LINE SHARING

Australian Made Solutions for Businesses of All Sizes

OPERATE any FAX and/or MODEM on any VOICE line, with or without FaxStream Duet

VOICE - FAX

Choose **EASY-CONNECT PLUS** for no compromise Fax reception on any Voice line! Integrate Any Fax (or Modem) into any Telephone Line using your existing number and/or a FaxStream Duet number. Completely Automatic and Transparent operation, without Compromise. No special wiring, any device at any location.



FAXSTREAM DUET

Choose our Low Cost **FAXMATE** device when you wish to use your existing Fax Machine or Modem with the new Telstra FaxStream Duet service. Diverts calls made to your new Fax number direct to your Fax device and calls to your other number to your telephone. Connects in minutes to ANY telephone socket.



VOICE - FAX - MODEM

Choose **EASY-CONNECT PRO** for no compromise Fax and Modem reception on any Voice line! Automatic Voice, Fax and Modem operation all on one line using your existing number and/or a FaxStream Duet number and/or EasyCall Multiple Number. Scanning Facility will allow your Fax to be used as a Scanner for your PC.



OPERATE your MODEM, MULTIPLE MODEMS, or your EFT-POS on your FAX LINE

AUTO MODEM RECEPTION

Choose **FMX-PRO** when you wish to fit a Modem to your Fax line and the Modem also needs to receive data calls.

Directs Fax calls to your Fax and Data Calls to Modem. Barge-In protection is provided to prevent one device interrupting the other while it is in use.



OUTGOING MODEM or EFT-POS

Choose **AUTO-CONNECT** when you wish to fit a Modem or EFT-POS unit to your Fax line, to make OUTGOING calls. Provides automatic connection on dialing. Other device is then locked out. Ideal for connection of Payphones, Modems and EFT-POS to any Fax, Commander, PABX or any type of Telephone line.



MULTIPLE MODEMS

Choose **AUTO-SELECT** when two or more Modems need to be connected to a Fax or dedicated Modem line. Fit up to eight Modems, or seven Modems and one Fax to the same line. Incoming calls are automatically routed to any device. Barge-in protection is provided.



IMPROVE the EFFICIENCY or PROFESSIONALISM of any ordinary TELEPHONE LINE

MUSIC OR MESSAGE ON HOLD FACILITY FOR ANY LINE

No longer is this important business facility restricted to Commander or PABX systems. Simply connect any radio, cassette, digital player, or even your PC to this low cost unit and add a professional touch to any existing line!



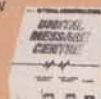
TELEPHONE CALL TRANSFER

Now you can answer a call on one telephone and then transfer the call to another telephone fitted to the same line, using your existing telephones. You can even use your phones as an intercom. No special wiring required. Up to 8 extensions per line. Barge-in protection is also provided.



DIGITAL MESSAGE CENTRE FOR MESSAGE ON HOLD

HIGH QUALITY Royalty Free Generic or Customized Digital Message for new installations or as a direct 'plug in replacement' for a Radio on Hold connected to any PABX, Commander or Key Telephone System.



DOOR STATION FOR ANY LINE

When a visitor presses a supplied door phone mounted at your front door or gate, your telephones will ring allowing you to answer and converse from any telephone. If your line is in use, a Call Interrupt facility will alert you. You can even open the gate or door with a command from your telephone.



HIGH QUALITY INTERCOM SYSTEM

INTERPHONE provides LOUD, CLEAR, telephone quality INTERCOM communication for 2 to 64 telephone handsets. Simply pick up any telephone and dial the desired telephone. InterPhone uses its own telephone cable, but does not connect to a Telecom line.



TWO LINE SELECTOR

Now you can connect TWO telephone lines (Telstra, Optus, ISDN or Tie Line) to one Fax, Modem, Cordless Telephone, Answering Machine or any Telephone device. Receive incoming calls from either line. Make outgoing calls on either line.



Turn ON, Turn OFF or RESET your PC, NETWORK or any ELECTRICAL device by TELEPHONE

REMOTE TELEPHONE ACTIVATOR

RTA will allow you to call in on your telephone line and SWITCH ON, SWITCH OFF, or RESET up to 6 separate electrical appliances, PCs or Networks using a touch tone telephone and PIN Number. Our Line Sharing technology means you can use it AUTOMATICALLY, on any existing line.



PC RESET UNIT

This low cost accessory for use with our RTA, is designed for quick and easy user fitting, direct to the back of ANY PC. Once fitted, you will be able to call in and RESET your PC from any Touch Tone Telephone, at any time, from anywhere in the world!



POWER CONTROL UNIT

This RTA accessory provides you with a simple '2 minute plug in' solution for controlling remote electrical equipment. Once fitted, you will be able to call in and TURN ON, TURN OFF or RESET the power connected to any Electrical Device from any Touch Tone Telephone.



TELEPHONE LINE SIMULATORS for TESTING, TRAINING or DEMONSTRATION of all TELEPHONE EQUIPMENT

RINGMASTER STD

This compact low cost device allows any two Telephone devices to ring and communicate with each other, without the need to connect to Two Telecom lines. Save 25c per call. Ideal for the Testing, Training & Demonstration of all telephone devices. Operation is Bi-Directional.



RINGMASTER PRO

Provides all of the facilities of our STD device and in addition generates Australian Dial Tone, Busy Tone and Disconnect Tones as appropriate. This unit also generates ALL EIGHT TELSTRA RING PATTERNS planned for use in Australia, including FaxStream Duet, EasyCall Multiple Number and Diverted Call rings.



RINGMASTER CLI

Provides all of the facilities of our PRO device and in addition generates TEN SEPARATE CALLING NUMBER DISPLAY (CND) test transmissions, in conjunction with any TELSTRA RING PATTERN. Alphanumeric and User Definable CND transmissions are also provided for.



Manufactured in Australia



NATIONAL COMMUNICATIONS
Australia's Telephone Line Sharing Company

For a Full Description of your Solution, Please Contact your State Office :

Manufactured in Australia



• NSW (02) 9905 6670 • VIC (03) 9887 6200 • QLD (07) 5596 5128 • SA (08) 8362 6776 • WA (08) 9317 1448 •

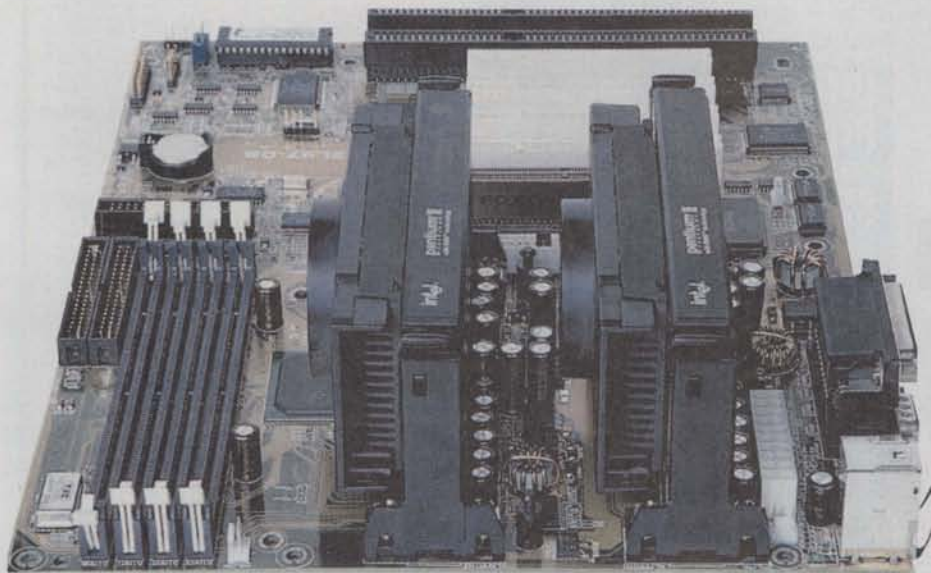
• UNCONDITIONAL 30 DAY MONEY BACK GUARANTEE • TWO YEAR WARRANTY • DEALER ENQUIRIES WELCOME •

Visit our comprehensive Web Site for information, brochures, prices, product sheets, installation diagrams, distributors or to place an order.

Web Site: www.natcomm.com.au

Email: natcomm@natcomm.com.au

Even Higher Performance!



These are just sample configurations - call for your requirements or build a system at our web site www.sigma.com.au

Dual 1GHz Pentium III Windows 2000 Workstation

- 2 x 1GHz Pentium III CPU
- Asus P2B-D Motherboard
- 256Mb 100MHz Cert SDRAM
- IBM 30Gb ATA100 7200rpm HD
- Elsa Gladiac GeForce II 32Mb
- Pioneer 106S Slot DVD Drive
- Sony 1.44 Floppy Drive
- Soundblaster Live! OEM
- Chenbro Full Tower Case
- Sony E220 17" Monitor
- Windows 2000 Pro
- MS Pro kbd, MS IntelliMouse

\$5,325 inc GST

19" Rackmount Windows 2000 Server

- 2 x 1GHz Pentium III
- Asus P2B-D Motherboard
- 512Mb 100MHz SDRAM
- IBM 60Gb 7200rpm HD
- Matrox G450 VGA
- Sony 48x CD ROM Drive
- Sony 1.44 Floppy Drive
- 19" Rackmount Case
- Windows 2000 Server
- MS Pro kbd & IntelliMouse

\$5,995 inc GST

Windows 2000 300Gb File Server

- 2 x 1GHz Pentium III
- 512Mb 100MHz SDRAM
- IBM 30Gb 7200rpm HD
- 4 x IBM 75Gb IDE Drives
- Matrox G450 VGA
- Sony 48x CD ROM Drive
- Sony 1.44 Floppy Drive
- Chenbro Cube Server Case
- Windows 2000 Server
- MS Pro kbd & IntelliMouse

\$8,757 inc GST

1GHz Pentium III 3D Graphics Workstation

- 1GHz Pentium III CPU
- 512Mb 133MHz SDRAM
- IBM 60Gb 7200rpm HD
- Elsa Gladiac 32Mb
- Sony 19" G420 Monitor
- Pioneer 106S DVD Drive
- Sony 1.44 Floppy Drive
- Chenbro Full Tower Case
- Windows 2000 Pro
- MS Pro kbd & IntelliMouse

\$5,290 inc GST

matrox
Digital Video Solutions

SONY

ASUS

adaptec

canopus

**Check out our online ordering service
at www.sigma.com.au**



SIGMACOM PTY LTD

ABN 55 065 279 101
www.sigma.com.au
sales@sigma.com.au

Tel (02) 9589 2300
Fax (02) 9589 2311

Call us, Fax us or Shop Online

New from Microsoft

Microsoft Office XP

- Std. - Upgrade \$485
- Std. - New Install \$980
- Pro. - Upgrade \$649
- Pro. - New Install \$1159
- Pro.Special Ed. \$880
- Pro.Subscription \$265*

* After Cashback



Lowest Prices in Australia

Office 2000

- SBE - Upgrade \$485
- SBE - New Install* \$649
- Std. - Upgrade \$485
- Std. - New Install* \$649
- Pro. - Upgrade \$620
- Pro. - New Install* \$780
- Prem. - Upgrade \$700
- Prem. - New Install* \$860



HURRY limited stocks

*Upgrade bundle with competitive product

Office 2000 Value Pack



Contains:

- Office 2000 Std. • Publisher 2000 • Age of Empires 1
- Encarta 2000 Std. • Intellimouse Explorer • Symantec NAV 2001 • Goldmine 5.0 • Intel Easy PC Webcam ... and more

Upg **\$529.00*** N/Install **\$660.00***

*After \$100 Cashback

NEW FOR 2001:

MS Office Pro 2000 Value Pack

Upg **\$749.00*** N/Install **\$895.00***

MS Office Prem. 2000 Value Pack

Upg **\$849.00*** N/Install **\$995.00***

*After \$100 Cashback

ABC FlowCharter V7	\$329
ACT 2000 V5	\$205
Adobe Acrobat V5 - New Install	\$569
Adobe InDesign V1.5	\$1429
Adobe PageMaker 6.5 PLUS	\$1075
Adobe Photoshop V6.0 NEW	\$1480
Arcserve 2000 W/Group Ed	\$1095

Office 97 Professional

New Install Upgrade
\$580 \$480

Includes: Word, Excel, Access, Powerpoint and Outlook



AutoCAD LT 2000i NEW!!!	\$1259
AutoCAD LT 2000i - Upgrade	\$390
Borland C++ Build.Std V5	\$248
Borland J Build.Pro V4	\$900*
*After \$200 cashback	
Borland Delphi Pro V5 - Upgrade	\$649
Borland Delphi Pro V5 - New Inst.	\$1399

Corporate Software Australia now sell:

- Computer Hardware • Scanners
- Laser Printers • Consumables



Visit our web site at
www.corpsoft.com.au
for pricing too low to print

Corel W/Perfect Office 2002 NEW	\$899
Corel W/Perfect Office 2002 Upg	\$370
CorelDRAW V10 - New Install*	\$950
*Upgrade bundle with competitive product	
CorelDRAW V10 - Upgrade	\$640
Crystal Reports Pro V8.5	\$825
Crystal Reports Pro V8.5 Upg	\$450
Diskeeper V6 for NT Workstation	\$109
Diskeeper V6 for NT Server	\$528
Drive Image Personal Edition V4	\$125
Easy CD Creator Platinum V5	\$139
Filemaker Pro V5.5 - NEW	\$430
Goldmine V5.0 Save \$100 !!!	\$280
Lotus SmartSuite Millen. V9.6 Full	\$449
Lotus SmartSuite Millen. V9.6 Upg	\$349
Macromedia Dreamweaver 4 - NEW	\$659
Macromedia Fireworks 4 - NEW	\$659
Macromedia FLASH V5	\$800
Macromedia Freehand V9*	\$800
*Eligible for FREE upgrade to V10	

Macromedia Cashback Special !!!	
Web Studio - inc. FLASH V5, Dreamworks V4, Fireworks V4 (after \$150 cashback)	\$1390
MS Exchange Server V5.5	
+ Free Upgrade to Exchange 2000	\$2525
MS FrontPage 2000	\$210
MS FrontPage 2000 - Upgrade	\$99

Norton Utilities 2001	\$79
OmniPage Pro V10 - New Install	\$660
OrgPublisher Personal	\$950
Paintshop Pro V7 - New Version	\$208
Paintshop Pro V7 - Upgrade	\$135
Partition Magic V6	\$129
PhotoImpact V6 - NEW	\$209
Quark Express V4.1	Check our Web Site
QuickBooks V8 NEW!!!	\$245
QuickBooks Pro V8	\$420
Quicken Personal	*After cashback \$85*
Quicken Personal Plus	*After cashback \$100*
Seagate B/up V8.5 - NT/2000	\$1225
Seagate B/up V8.5 - NT/2000 Upg	\$649
Seagate B/up V4.5 Desktop Pro	\$195

ACT 2000
\$205



TypeQuick (for Windows)	\$89
VISIO Pro 2002 - Upgrade	\$440
VISIO Std 2002 - Upgrade	\$195
WinFax Pro V10	\$110
WinForecast	\$1320
WinZIP V8	\$63
WinZIP V8 10 user	\$480



CORPORATE SOFTWARE AUSTRALIA PTY LIMITED
Unit 1, 28 Victoria St, Smithfield NSW 2164
PO Box 6168, Wetherill Park NSW 2164

www.corpsoft.com.au

Calls answered by our operator within 5 rings or FREE FREIGHT

Intel Easy PC Internet Camera

\$80 each
\$150 for 2



Goldmine Version 5.0

\$280 1 User
\$540 2 User
\$1200 5 User
\$2000 10 User

ADOBE Acrobat V5

\$280 Upgrade
\$569 N/Install



Visual BASIC PROFESSIONAL Version 6

SAVE \$444 \$525

This special offer is for owners of MS Office Pro

CorelDRAW Version 10

\$640 Upgrade Only
\$950 New Installations*

*Upgrade bundle with competitive product



Paint Shop Pro Version 7

\$208.00

Upgrade **\$135.00**

Microtek Scanmaker 5700

- Win/Mac
- Firewire/USB
- 1200dpi Optical Resolution

\$859

Includes PCI Firewire adaptor



ADOBE Photoshop Latest Version 6.0

\$580 Upgrade
\$1480 N/Install

PC Anywhere Version 10

HOST and REMOTE
\$235.00



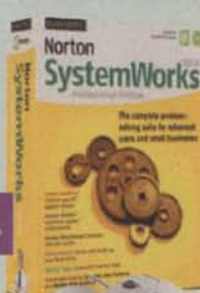
NORTON SystemWorks 2001

Std **\$120.00**
after \$40 cashback

Plus FREE Logitech Mouse*

Pro **\$150.00**
after \$50 cashback

Plus FREE Logitech Internet Camera*



NORTON AntiVirus 2001

\$84.00 1 User
\$149.00 2 User

Plus FREE Logitech Mouse*

\$269.00 5 User

Plus FREE Norton Utilities 2001*



Adobe Special Offer

FREE Scanner or Printer or Digital Camera when you buy

Illustrator V9 (Win) for \$899

Choose from one of the following:

- Epson Stylus Colour 480 Printer
- Canon N640P Colour Scanner



NOTE: Free products subject to availability and may change without notice - Limited time offer

Microsoft CLEARANCES

Windows MILLENNIUM EDITION

- Upg from Win98 **\$110**
- Upg from Win95 **\$175**
- New Install **\$350**



Publisher 98 **\$88.00**

IntelliMouse **\$45.00**

Buy 5 get 1 FREE



PLEASE NOTE: • Delivery: Post \$11 or Courier \$15.40 • We accept Bankcard Mastercard and VISA, but not AMEX or Diners. COD welcome • Phone, Fax and Mail Orders Welcomed • Goods ordered in error incur a 15% restocking fee • We Accept authorised returns for Credit within 10 days if goods are unopened and in saleable condition • Moneyback Offers (if any) are the responsibility of the manufacturer • Some cashbacks & offers expire on 30th June • E & O.E • All Prices are Subject to Change Without Notice • Images shown are for illustration purposes only • Artwork prepared June 6 - prices advertised are GST inclusive. 7/01

We GUARANTEE to beat any genuine competitor's price!!!

Phone (02) 9725 3700 • Fax (02) 9604 1983

NEW TOLL FREE ORDER LINE: 1300 138 333

**100%
AUSTRALIAN
OWNED**
Over 14 years in
operation

SwannSmart Turbo 56K External Modem

voice/fax/data
Speed Does Matter!

Intel Chipset. The best voice modem available
Bonus Web Works 2000 CD ROM
5 Year guarantee
30 day satisfaction guarantee



Swann FireWire™ Pro DV Kit

Complete Digital Video Editing FireWire Solution.
Winner of Editors Choice PC Magazine in October 2000.

Why pay thousands for a digital video editing solution?
Swann's FireWire Pro DV Kit contains everything you
need to capture, edit and output broadcast
quality videos for half the cost.

Contains FireWire card, 5 CD ROM software
titles, FireWire cable, and a bonus headset.



Swann FireWire™ PCI Card

3 Port IEEE 1394 Connectivity Card

The Swann FireWire PCI Card allows you to upgrade
your computer for a fraction of the cost, so you
can connect IEEE 1394/ FireWire devices such as
printers, scanners, external HDDs, CD recorders
and digital cameras, with data transfer
speeds of up to 400Mbps.



expand
digitise
connect
organise



SpyCam

Miniature Video Camera

- Lost cost security solution
- Tiny size for undetected surveillance
- Easy installation
- Connect to a TV or VCR
- Install in the home or workplace



Wireless Guardian AV Monitor & Camera

- Monitor children, workplace surveillance,
home security
- Completely wireless system for portability
- Infrared LEDs for night vision
- Also available in 2.4GHz

Swann Communications is a 100% Australian owned & operated company. All Swann products feature easy-to-install software and product guides, to get you up and running in no time. We also have a team of friendly technicians, who are always ready to help with your queries. Simply call: **Tech Support: 1300 13 8324**



Swann

simply communicate

check out our website for our complete product range:

www.swann.com.au

Business GET THE POWER



1GHz Power On The Move

All-in-one 1GHz Notebook **only \$2999**

The PowerNote 340 is designed to offer you a real desktop power solution that addresses the needs of the modern business world. Powered by the fastest Pentium® III processors up to 1GHz, featuring the integrated 10/100 Mps LAN card and 56K Modem which can conveniently be connected to your office network for quick and easy network access.

PowerNote 340CTL-700

- Intel® Celeron™ Processor 700MHz
- 14.1" Active TFT LCD 1024 x 768
- 64MB RAM Expandable to 256MB
- ▶ Upgrade to 128Mb RAM Add \$99
- 10 GB Ultra DMA Hard Disk
- 24X CD-ROM Drive
- Integrated 10/100 LAN & 56K Modem
- Microsoft® Windows® Me
- 1 Year Limited Warranty*

\$2599 \$25.49/w*

PowerNote 340CTL-1000

- Intel® Pentium® III Processor 1GHz
- 14.1" Active TFT LCD 1024 x 768
- 128MB RAM Expandable to 256MB
- 10GB Ultra DMA Hard Disk
- 24X CD-ROM Drive
- ▶ Upgrade to 8X DVD Add \$299
- Integrated 10/100 LAN & 56K Modem
- Microsoft® Windows® Me
- 1 Year Limited Warranty*

\$2999 \$29.41/w*

PowerNote 350DT-700

- Intel® Pentium® III Processor 700MHz
- 15.1" Active TFT LCD 1024 x 768
- 128MB RAM Expandable to 256MB
- ▶ **FREE Upgrade to 256Mb RAM** Valid till 15/07/2001
- 10 GB Ultra DMA Hard Disk
- ▶ Upgrade to 20Gb Hard Disk Add \$159
- 8X DVD-ROM Drive
- Integrated 10/100 LAN & Modem
- Microsoft® Windows® Me
- 1 Year Limited Warranty*

\$3899 \$36.44/w*



1GHz Desktop **only \$1799**

Fully configured featuring **256MB RAM** **100M LAN & 56K Modem**

IntelliPro 1000GS

- Intel® Pentium® III Processor 1GHz
- 256MB SDRAM, 20GB Hard Disk
- 17" Monitor (0.27dp, 16"v.i.s.)
- 32Mb SMA 4xAGP Graphics
- 3D Audio, Speakers, 52X CD-ROM
- 104-Key Keyboard & Mouse
- 10/100 Network Card & 56K Modem
- Microsoft® Windows® Me
- Corel® WordPerfect® Suite 8 & PC-Cillin Anti-virus
- 3-Year Limited Warranty*

\$1799 \$19.72/w*

IntelliPro 2000BTS

- AMD® Athlon® 1.2GHz (FSB 266MHz)
- 256MB SDRAM, 30GB Hard Disk
- 17" Philips 107T Flat Monitor
- 32MB GeForce™ MX200 AGP 4X
- 3D Audio & Flat Panel Speakers
- 12X DVD-ROM Drive
- 104-Key Keyboard & Logitech Mouse
- 56K V.90 Data/Fax Modem
- Microsoft® Windows® Me
- 3-Year Limited Warranty*

\$2299 \$22.55/w*

IntelliPro 1400GX

- Intel® Pentium 4® 1.4GHz
- 128MB RDRAM, 40GB Hard Disk
- 19" Panasonic SL95 Monitor (0.25dp)
- 64MB GeForce™ MX200 AGP 4X
- Creative™ Audio & Flat Panel Speakers
- Pioneer® 16X DVD-ROM Drive
- 104-Key Keyboard & Logitech Mouse
- 56K V.90 Data/Fax Modem
- Microsoft® Windows® Me
- 3-Year Limited Warranty*

\$2899 \$28.43/w*

DIGITALSTAR

1 8 0 0 8 0 0 2 3 8 www.digitalstar.com.au

North Sydney **02-99292868**
Shop2, 110 Walker St, Fax: 02-99292865

Auburn **02-87486848**
15 Newton St South Fax: 02-97379326

Notebook Reseller Wanted
Ph: **02-87486803**

* DigitalStar's terms and conditions of sale are applied and are available on request. Prices, specifications and availability subject to change without notice. The Intel Inside logo and Pentium are registered trademarks of Intel Corporation. All brands and product names are trademarks of their respective companies. Product pictures for illustrative purpose only. All Digital Star Desktop PC comes with a 3-Year Limited Return to Base Warranty. First two-year provide parts and labour warranty. Year 3 provide labour warranty only.

Go For ...

LASER

GOLD



QUALITY...



GOLD



STABILITY...

mitsui

GOLD



RELIABILITY

Spindles of 25, 50 or 100 or Individual Jewel Cases

ONLY AVAILABLE AT...

NASA TECHNOLOGY

www.nasa.com.au

Tel: 02-9699-8888 Fax: 02-9699-5188

Unit 7, 119-133 McEvoy St Alexandria, NSW 2015 email: sales@nasa.com.au



AT LAST, A CD BURNER THAT LETS YOU RUN MULTIPLE APPLICATIONS AND RECORD
AT THE SAME TIME. THE KEY IS TDK FAILSAFE TECHNOLOGY, AND VELOCD HAS IT.
WITH FAILSAFE, BUFFER UNDERRUN ERRORS ARE ELIMINATED. THAT MEANS NO
MORE CD COASTERS. JUST SWEET RECORDING PERFECTION.



o velocd

MP3
MUSIC
DATA
PHOTO
VIDEO

32x
AUDIO RIP

Rip a 3-minute song from a CD
in less than 6 seconds with
100% accuracy, no clicks or pops.

Burn a full CD in just 5 minutes. Converts
MP3/WAV audio play lists automatically into
play anywhere CDs.

16x
WRITE

THE FAILSAFE™ CHOICE
FOR CD RECORDING

Backup data and share projects
faster and more convenient
than any other storage device.

10x
REWRITE

AT LAST, A CD BURNER THAT LETS YOU RUN MULTIPLE APPLICATIONS
AND RECORD AT THE SAME TIME. THE KEY IS TDK FAILSAFE
TECHNOLOGY, AND VELOCD HAS IT. WITH FAILSAFE, BUFFER
UNDERRUN ERRORS ARE ELIMINATED. THAT MEANS NO MORE CD
COASTERS. JUST SWEET RECORDING PERFECTION.

80 MINUTE
READY

40x
READ

INTERNAL
ATAPI / EIDE
CD-REWRITABLE DRIVE

For
Windows 95/98/NT
2000 ME

Mix your music and develop your Sweetspot for digital audio recording: www.nasa.com.au/velocd.html

AVAILABLE FROM

NASA TECHNOLOGY

www.nasa.com.au

Tel: 02-9699-8888 Fax: 02-9699-5188

Unit 7, 119-133 McEvoy St Alexandria, NSW 2015 email: sales@nasa.com.au





You can afford brand names

USCT INTEL SERIES

Home/Office

- Asus Motherboard
- Sony DVD ROM
- Sony CD RW (32x8x4)
- Sony 1.44 MB Floppy
- NCP 256 MB 133 MHz
- Seagate 30.1 GB H/D
- 64 MB 4 x AGP Video Display
- Auriga 17" Digital Monitor
- 4 Channel 3D Audio
- Motorola 56K Fax/Voice Modem
- 480 Watt Speakers
- Keyboard and Mouse
- 10/100 Network Card
- Free Antivirus
- Free Life Time Tel Support
- Free 2 Yrs Parts & 5 Yrs Labour Warranty*

PENTIUM III 1 GHz \$1895

Upgrades:

- 64 MB Geforce2 MX, V/C \$145 extra
- 19" Digital Monitor \$245 extra
- 40.1 7200 rpm H/D \$95 extra
- M/S Internet K/B & Mouse \$65 extra

The Professional

- Genuine Intel 850 M/B
- Sony CD RW (32x8x4)
- Sony 1.44 MB Floppy
- 128 MB 800 MHz
- Seagate 20.1 GB 7200 rpm H/D
- 32 MB Riva TNT II V/C
- Auriga 17" Digital Monitor
- Creative 128 Bit Soundcard
- Motorola 56K Fax/Voice Modem
- Altec Lansing ACS 33
- Keyboard and Mouse
- Free Antivirus
- Free Life Time Tel Support
- Free 2 Yrs Parts & 5 Yrs Labour Warranty*

PENTIUM 4 1.4 GHz \$2245
PENTIUM 4 1.7 GHz \$2595

Upgrades:

- 40.1 7200 rpm H/D \$95 extra
- 64 MB Geforce2 MX, V/C \$95 extra
- Sony DVD-ROM \$145 extra
- 128 MB 800 MHz RAM \$245 extra
- Creative Live Value \$95 extra
- 17" LG Flat Monitor \$295 extra

The Executive

- Genuine Intel 850 M/B
- Aopen 32x12x10 CD-RW
- Aopen DVD-ROM
- Sony 1.44 MB Floppy
- 256 MB 800 MHz
- Seagate 40.1 GB 7200 rpm H/D
- 64 MB Geforce2 MX, TV-Out V/C
- 19" Hitachi Tube .22 Monitor
- Creative Live Value! Soundcard
- Motorola 56K Fax/Voice Modem
- Altec Lansing ACS 33
- Keyboard and Mouse
- Free Antivirus
- Free Life Time Tel Support
- Free 2 Yrs Parts & 5 Yrs Labour Warranty*

PENTIUM 4 1.4 GHz \$3245
PENTIUM 4 1.7 GHz \$3595

Upgrades:

- Creative Platinum S/C \$245 extra
- 64 MB Geforce2, Pro DDR \$245 extra
- Altec Lansing ACS 45.1 \$95 extra
- 17" E220 Sony Monitor \$145 extra
- 19" Mitsubishi Flat Monitor \$495 extra
- 15" LG LCD Monitor \$895 extra

**Call for
our latest
pricing.**

**Nationwide
delivery
available.**

**Options
with systems only**

Printers

CANON BJC 1000	\$110
CANON BJC 2100	\$150
CANON BJC 5400	\$220
EPSON STYLUS 680	\$250
HP DESKJET 840C	\$225
HP DESKJET 930C	\$295

Scanners

CANON 340P	\$110
CANON 650U	\$175
EPSON 640 USB	\$275
HP 4300C USB	\$275
HP 5300C USB	\$495

Software

WINDOWS 98 / ME (OEM)	\$185
BRITANNICA STANDARD (OEM)	\$35
MS WORKSUITE 2000	\$135
M/S SBE upgrade (Word, Excel, Publisher)	\$345
M/S OFFICE STANDARD upgrade	\$425
M/S OFFICE 2000 PRO upgrade	\$525

Accessories

17" LG DIGITAL MONITOR	\$355
17" SONY TRINITRON MONITOR	\$695
MUSTEK INTERNET CAMERA	\$95
AOPEN CD-RW (32x12x10)	\$315
MICROSOFT INTERNET K/B & MOUSE (DEMO)	\$75
LOGITECH CORDLESS K/B & MOUSE	\$165
ALTEC LANSING ACS45.1 SPEAKERS	\$165

USCT AMD SERIES

Home/Office

- Gigabyte 7IXE4 M/B
- NCP 256 MB SDRAM
- Seagate 20.1 GB H/D
- 32 MB Riva TNT II V/C
- Creative 52 x CD-ROM
- Creative 128 Bit Sound
- Auriga 17" Digital Monitor
- Sony 1.44 MB Floppy
- Motorola 56K Fax/Voice Modem
- 480 Watt Speakers
- Keyboard and Mouse
- Free Antivirus
- Free Life Time Tel Support
- Free 2 Yrs Parts & 5 Yrs Labour Warranty*

DURON 800 MHz \$1395
ATHLON 900 MHz \$1545

Upgrades:

- Sony DVD-ROM \$95 extra
- Sony CD-RW (32x8x4) \$165 extra
- 64 MB Geforce2 MX \$95 extra
- 30.1 7200 RPM H/D \$95 extra

The Gamer

- Asus A7V/133 M/B
- NCP 256 SDRAM
- Seagate 30.1 GB 7200 rpm H/D
- 64 MB Geforce2 MX, TV-Out
- Sony 32 x 8 x 4 CD-RW
- Sony DVD-ROM
- Creative Live Value Sound
- Auriga 17" Digital Monitor
- Sony 1.44 MB Floppy
- Motorola 56K Fax/Voice Modem
- Altec Lansing ACS 33
- Keyboard and Mouse
- Free Antivirus
- Free Life Time Tel Support
- Free 2 Yrs Parts & 5 Yrs Labour Warranty*

ATHLON 900 MHz \$2195
ATHLON 1.2 GHz \$2345

Upgrades:

- 40.1 7200 RPM H/D \$95 extra
- 64 MB Geforce2 Pro DDR \$295 extra
- Creative Digital Entertainment \$95 extra
- 17" LG Flat Monitor \$295 extra
- M/S Internet K/B & Mouse \$65 extra

The Ultimate

- Asus A7A/266 DDR
- Hyundai 256 DDR RAM
- Seagate 40.1 GB 7200 rpm H/D
- 64 MB Geforce2 Pro DDR, TV-Out
- Aopen 32 x 12 x 10 CD-RW
- Aopen DVD-ROM
- Creative 5.1 Digital Entertainment
- 19" Hitachi Tube 0.22 Monitor
- Sony 1.44 MB Floppy
- Motorola 56K Fax/Voice Voice
- Altec Lansing ACS 33
- Keyboard and Mouse
- Free Antivirus
- Free Life Time Tel Support
- Free 2 Yrs Parts & 5 Yrs Labour Warranty*

ATHLON 1.3 GHz \$3195

Upgrades:

- Creative Platinum S/C \$245 extra
- Altec Lansing ACS 45.1 \$95 extra
- 17" E220 Sony Monitor \$145 extra
- 19" Mitsubishi Flat Monitor \$495 extra
- 15" LG LCD Monitor \$895 extra

**Look for our weekly
packages every Saturday
in the Sydney Morning Herald
(Icon section)**

**Shop 5-6, cnr The Appian Way
and North Terrace
(opposite Bankstown Square)
Phone: (02) 9709 2355
Fax: (02) 9709 3211
Email: sales@usct.com.au
Web: www.usct.com.au**



tel: (02) 9747 0001; 9744 6667 fax: (02) 9747 8878 e-mail: pc@computeronline.com.au

Address www.computeronline.com.au



Please check our Web Site for additional products, online ordering and updated prices. prices include GST and are subject to change without prior notice

Computer Parts and Accessories

CPUs		Hilachi		Video cards		Printers		Sound Cards	
Intel		Notebook 12GB	\$290	4M 3D PCI / AGP	\$45	EPSON		ISA / PCI Sound	\$25
Celeron 733	\$160	Motherboards		8MSIS AGP or PCI	\$55	Stylus 480	\$135	Sound	
Celeron 766	\$170	Pentium II / III		16Mb SIS AGP	\$80	Stylus 580	\$158	BLASTER	
Celeron 800	\$185	ASUS CUV-4X-C	\$210	16Mb TNT2 / 32Mb TNT2 AGP	\$90 / \$95	Stylus 680	\$250	PCI 128 oem	\$45
Celeron 850	\$205	ASUS CUV-4X-E	\$245	32Mb TNT2 PCI	\$129	Photo 720	\$375	Live oem	\$100
Pentium III 866EB	\$375	ASUS CUSL2	\$310	32Mb TNT2 with TV out AGP / PCI	\$120 / \$150	Photo 870	\$500	Live DE 5.1	\$175
Pentium III 933EB	\$430	ASUS CUSL2-C	\$250	32Mb TNT2 with TV out video in AGP	\$180	Photo 890	\$560	Live Platinum 5.1	\$420
Pentium III 1GHz	\$450	ASUS CUSI-M	\$165	Matrox G450 32Mb Dual head AGP	\$320	Photo 1290 (A3)	\$920	Memory	
P4 - 1.3Gb	\$595	GIGABYTE		ASUS		Canon		64Mb SDRAM	\$40
P4 - 1.4Gb	\$644	GA-6VXC7-4X-P	\$165	V7100 GeForce II MX 32Mb with TV out	\$230	BJC 1000SP	\$107	128Mb SDRAM	\$55
P4 - 1.5Gb	\$794	GA-60XE-1	\$215	V7700 GeForce 32Mb Deluxe, DDR	\$482	BJC 2100SP	\$144	256Mb SDRAM	\$120
AMD		GA-60XE	\$235	V7700 GeForce 64Mb Pure, DDR	\$700	BJC 3000SP	\$203	Modems	
Athlon 1G & fan	\$355	GA-60X	\$205	V7700 GeForce 64Mb Deluxe, DDR	\$757	BJC 6200	\$273	56K Int.	\$50
Athlon 1.1G & fan	\$395	MSI-694D Master	\$290	V7700 GeForce 64Mb Ultra	\$999	BJC 7100	\$300	Netcomm 56K Int.	\$55
Athlon 1.2G & fan	\$415	MSI-6368	\$169	Hercules 3D Prophet 4000 XT 32Mb	\$210	Laser LBP800 (8ppm)	\$475	56K Ext. or USB	\$90
Athlon 1.3G & fan	\$460	MSI-K7T 266 Pro-R	\$349	Hercules 3D Prophet 4500 64Mb TV out	\$399	hp		Netcomm Mega-i	\$99
Duron 800 & fan	\$150	Aopen AX34	\$200	Hercules 3D Prophet II 64Mb GTS	\$620	HP 640C	\$170	Netcomm Rave USB	\$140
Duron 850 & fan	\$185	Aopen AX34proII	\$220	Hercules 3D Prophet II 64Mb Ultra	\$875	HP 840C	\$210	Netcomm Roadster	\$180
Duron 900 & fan	\$215	PROTAC		Hercules 3D Prophet GeForce III 64Mb	\$999	LaserJet 1200 (8ppm)	\$765	U.S. Robotics 56K	\$180
Cyrix III-667 & fan	\$120	M758Lmr / M754Lmr	\$165	Eagle GeForce II MX AGP 32Mb TV-out	\$180	Panasonic KX6100	\$305	PCMCIA 56K	\$140
Cyrix III-700 & fan	\$130	Abit VP6 Dual cpu	\$343	Eagle GeForce II MX G400 64Mb TV-out	\$230	Scanners		Networking	
Hard disks		AMD Athlon		Voodoo III 3000 AGP 16Mb power color	\$180	Acer		Network card 10M	\$22
Western Digital		Gigabyte 71XE4	\$170	CD Rewriters		640U	\$125	Network card 100M	\$30
WD 200EB 20GB	\$180	Gigabyte 72M	\$185	Diamond DD10432A 32x10x4 IDE Kit	\$255	640P Vuego	\$120	5 Port Hub 10Mb	\$50
WD 307AA 30GB	\$220	Gigabyte 7ZX	\$235	LG CED-8080B 32x8x4 IDE Kit	\$220	640UT Vuego	\$150	8 Port Hub 10Mb	\$64
7200 RPM		ASUS A7V-E	\$260	Panasonic 7585 32x8x4 IDE Kit	\$280	Canon N340P	\$110	5 Port Hub 100Mb	\$90
WD 200BB 20GB	\$215	ASUS A7V133-C	\$280	Acer 10832IA 32x10x4 IDE Kit	\$270	Canon N640P	\$130	8 Port Hub 100Mb	\$120
WD 300BB 30GB	\$260	ASUS A7V133	\$317	Aopen RW1232 32x10x4 IDE Kit	\$320	Canon N650U	\$160	USB Hub 4 port	\$60
WD 400BB 40GB	\$320	ASUS A7M266, DDR	\$380	Sony CRX140E 32x8x4 IDE oem	\$250	Canon N1220U	\$250	Removable Storage	
Seagate		ASUS A7A266	\$370	Sony CRX145EBK 32x10x4 IDE Kit	\$300	Canon N660U	\$255	1.44Mb Floppy	\$27
Barracuda III 20GB	\$220	ABIT K7	\$275	Sony CRX160E 32x12x8 IDE oem	\$330	HP 3300C	\$160	120Mb disk	\$18
Barracuda III 30GB	\$280	ABIT K7T Raid	\$300	Sony CRX160S 32x12x8 SCSI oem	\$360	HP 4300C	\$189	100Mb Zip Internal	\$110
Quantum 20GB	\$220	ABIT K7A	\$285	Ricoh MP7083A 32x8x8 IDE Kit	\$250	Mitsubishi DV648U	\$100	100Mb Zip disk	\$17
Quantum 30GB	\$270	ABIT K7A Raid	\$328	Ricoh MP7120A 32x12x10 IDE Kit	\$350	Epson Perfection 640	\$255	250Mb Zip disk	\$25
Deskstar		MSI K7T Pro II A	\$225	Ricoh MP7200A 40x20x10 IDE Kit	\$480	Add on cards		Cases	
Deskstar 20GB	\$260	MSI K7T Turbo-R	\$295	Ricoh MP9060A 24x6x4 DVD CD-RW Kit	\$350	Promise U100	\$90	ATX Midi case	\$55
Deskstar 40GB	\$340	MSI 6340M	\$240	Ricoh MP9120A 32x12x10 DVD CD-RW	\$550	PCI SCSI II card	\$50	ATX Full tower case	\$120
		PROTAC M810	\$190	Kodak USB external Drive 8x4x4	\$450	USB PCI card	\$40	ATX Aopen HQ45	\$120
								ATX Aopen HQ08	\$185

Computer Systems - 1 year parts 2 years labour Return to Base warranty

Intel Xerix pro		AMD Astra pro		Value Series		SYSTEM OPTIONS	
<ul style="list-style-type: none"> 128M SDRAM PC133 20GB 7200rpm HDD Panasonic Floppy 32M TNT2 Video card S/B 128 3D Sound card 50x CD Rom 17" Acer / LG Monitor 480 Watt Speakers Midi Deluxe ATX case Acer Win98 Keyboard Microsoft Intellimouse & Pad 		<ul style="list-style-type: none"> 128M SDRAM PC133 20GB 7200rpm HDD Panasonic Floppy 32M GeForce II MX S/B 128 3D Sound card 50x CD Rom 17" Acer / LG Monitor 480 Watt Speakers Aopen KF45 ATX case Acer Win98 Keyboard Microsoft Intellimouse & Pad 		<ul style="list-style-type: none"> 64M SDRAM PC133 10GB HDD UDMA 100 Panasonic Floppy 16M Video card built-in PCI 3D Sound card built-in 56K Modem built-in 50x CD Rom 15" SVGA Monitor 120 Watt Speakers Midi Deluxe ATX case Win98 Keyboard A4 Mouse & Pad 		Monitors	
Celeron 733	\$1450	Duron 800	\$1490	Celeron 733	\$1050	15" Samsung 55E	\$240
Celeron 800	\$1480	Duron 850	\$1520	Celeron 800	\$1080	15" Daewoo 523X	\$240
Celeron 850	\$1520	Duron 900	\$1560	Celeron 850	\$1120	15" Mitsubishi Diamond / LG	\$250
Pentium III 866	\$1690	Athlon 1G	\$1690	Pentium III 866	\$1300	17" Olympic	\$360
Pentium III 933	\$1750	Athlon 1.2G	\$1750	Pentium III 933	\$1360	17" Acer V771C	\$370
Pentium III 1G	\$1790	Athlon 1.3G	\$1800	Pentium III 1G	\$1390	17" Mitsubishi 1770g	\$370
Blank CDs		Cameras		Software		17" LG 775N	\$370
Aterra	\$1.0	Logitech Express	\$95	Windows Millennium	\$200	17" Samsung 75E	\$370
Ricoh/Kodak/Misumi	\$1.5	Creative web cam	\$100	Windows 98 2nd edition	\$200	17" Hitachi CM615ET	\$390
Verbatim 80min	\$2.0	Vcam Digital	\$100	Windows 2000 oem-Full	\$300	17" Diamond 17NF	\$598
Rewritable CD	\$4.0	USB Camera	\$80	MS WorkSuite 2000 oem	\$140	17" Sony CPD220	\$675
				Office 2000 Small Bus	\$380	19" Sony CPD420	\$1230
				MS Office 2000 oem		19" Mitsubishi 1995SL	\$705
				Professional-Full	\$500	CD Rom / DVD Rom	
						50x or 52x CDROM	\$75
						DVD 12x Creative / Aopen	\$145
						DVD 16x Pioneer / Pana	\$170
						DVD 16x Mitsubishi	\$190
						DVD 16x Aopen kit	\$250
						Speakers	
						120W SPKs / 480W	\$15/\$30
						400W SPKs mini Sub-Woofer	\$40
						600W Sub-Woofer SPKs.	\$70
						Creative PC Works S/Woofer	\$90
						Creative FPS1500 4 point	\$190
						Altec Lansing ACS22 / 33	\$45/\$80
						Altec Lansing ACS45.1	\$145
						Mouse	
						A4-Tech PS/2 or Serial	\$8
						A4-Tech PS/2 wheel	\$15
						A4-Tech 4D wheel	\$30
						A4-Tech wireless PS/2	\$30
						A4-Tech scroll Track	\$30
						8D Wheel Mouse	\$30
						Logitech	
						PS/2 Mouse	\$15
						Wheel Mouse PS/2 or USB	\$30
						Microsoft	
						IntelliMouse PS/2	\$30
						IntelliEye Mouse Optical	\$75
						IntelliEye Mouse Explorer	\$90
						SAMSUNG Cyber Optical	\$50
						Keyboards	
						Windows 98 K/B AT or PS/2	\$15
						Acer K/B AT&PS/2	\$20
						Multimedia K/B AT	\$25
						Internet K/B PS/2 & AT	\$35
						Logitech Cordless iTouch	\$140
						Microsoft Internet K/B	\$40
						Microsoft Natural K/B	\$45
						Honeywell Multimedia	\$50
						Wireless K/B with Mouse	\$80
						Wireless K/B	\$60

Payment and delivery We accept Cash, Cheque and direct deposit.
All orders will be dispatched after clearance. We accept Eftpos
for in shop purchases. Prices are exclusive of delivery and Insurance

PC SUPERMARKET

For advertising details contact Nima Price on (02) 9288 9151

MARKETPLACE

COMPUTER PRODUCT AND
SERVICES GUIDE

COMPANIES INSIDE

Compaq Service Centre	Independent Software Duplication	Performance Memory	Total Data Capture
Diskmax	Multipl CD	Rite Price	Usonic Power
Altima Computers	Easy Refills	New Reality Resources	Server 101
CD Rom Services	ESPCO	Pelham	Stroudco
			VME Systems

SUPERIOR PERFORMANCE INKJET REFILL KITS

REFILL & SAVE AT LEAST 80% OFF PRINTING COSTS

BLACK REFILL KITS FROM ONLY \$24.90

Black kits include superior, dense & sharp black inks!

DESCRIPTION (Kits Compatible with Printers listed below)	No. of Refills	Product Code
CANON BJC-30	60	20-BKL
CANON BJC-70/BJC 80	60	21-BKL
CANON BC-01/02 BJC-10E/20 BJC-200 Series & BJC-1000 Series	9	3-BKL
CANON BJC-300/330	7	4-BKL
CANON BJC-600/610/620	16	5-BKL
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BCI-21	45	19-BKL
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BC-20	9	18-BKL
CANON BJC-3000/6000/8000 Series	12	46-BKL
HP Desk Jet 400/500 Series	6	8A-BKL
HP Desk Jet 600/660/690 Series	6	8B-BKL
HP Desk Jet 700/800/900/1000 Series	8	29-BKL
HP Desk Jet 300 Series & Olivetti JP's!	8	7-BKL
EPSON Stylus 400/800/800+/1000	8	1-BKL
EPSON Stylus Colour /PRO/XL	12	2-BKL
EPSON Stylus 820/colour II/III	12	23-BKL
EPSON Stylus Colour 200/300/400/500/600/800/850/1520	12	33A-BKL
EPSON Stylus Colour 440/460/480/640/660/700/740/760/900	12	33B-BKL
IBM/LEXMARK 4076/1000/1020/2000/2030/2050 Series	12	35A-BKL
IBM/LEXMARK 5000/5700/7000 & Z Series	12	35B-BKL
CANON, EPSON, HP Fluorescent & Photo Realistic Kits!	12	Please Call!



BUY 3
GET 1
FREE

100%
SATISFACTION
GUARANTEED



Save at least 60% on
the cost of a new
cartridge with
New Reality
compatible cartridges!

COLOUR REFILL KITS FROM ONLY \$34.90

Colour kits include cyan, magenta & yellow inks!

DESCRIPTION (Kits Compatible with Printers listed below)	No. of Refills	Product Code
CANON BJC-70/80	3x30	22-CLR
CANON BJC-210/210SP/240/255/265/1000 Series	3x12	25-CLR
CANON BJC-600/610/620	3x8	10-CLR
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BCI-21	3x30	17-CLR
CANON BJC-3000/6000/8000 Series	3x8	47-CLR
HP Colour Desk Jet 300/400/500 Series & Olivetti!	3x12	14A-CLR
HP Colour Desk Jet 600C/660C/690C Series	3x12	14B-CLR
HP Desk Jet 850C/855C/870C/1000C Series	3x3	30A-CLR
HP Desk Jet 710/720/890/900 Series	3x3	30B-CLR
EPSON Stylus Colour /PRO/XL	3x4	16-CLR
EPSON Stylus 820/colour II/III	3x12	24-CLR
EPSON Stylus Colour 200/300/400/500/600/800/850/1520	3x12	34A-CLR
EPSON Stylus Colour 440/460/480/640/660/700/740/760/900	3x12	34B-CLR
IBM/LEXMARK 4076/1000/1020/2000/2030/2050 Series	3x6	36A-CLR
IBM/LEXMARK 5000/5700/7000 & Z Series	3x6	36B-CLR
CANON, EPSON, HP Fluorescent & Photo Realistic Kits!	12/Colour	Please Call!



We stock
Australia's
largest range
of Inkjet Paper &
Media at
competitive
prices!



Your printer not listed? We stock Australia's largest range of printer consumables. Call now!

USING NEW REALITY'S INKJET REFILL KITS WILL NOT VOID YOUR PRINTER'S WARRANTY.
BEWARE OF INFERIOR COPIES, BUY THE "ORIGINAL" AUSTRALIAN REFILL KIT!

New Reality has no affiliation with any printer manufacturers or OEM's and has no arrangement been made with them to form the basis of any statements we make.



New Reality Resources Pty. Ltd. ACN - 073 908 013
Australia Wide FREECALL - 1800 680 605
Old Phone - (07) 3245 2411 Fax - (07) 3245 2755
VIC Phone - (03) 9878 8288 Fax - (03) 9878 3933
Bayside Business Park
Shop 1 / 70 Redland Bay Rd
Capebaba Q 4157

AUSTRALIA WIDE FREECALL
1800 680 605

FREE AUSTRALIA WIDE DELIVERY! SAME DAY DISPATCH!!
COD * MONEY ORDER * CHEQUE * MASTER * VISA * BANKCARD * AMEX ACCEPTED

MEMORY, BATTERIES & HARDDRIVES

Clone your CD

Super fast duplicating & replicating service

- Premium recordable disks • Any quantity
- 100% verification • Unbeatable rates
- Same day duplicating service

CD-ROM SERVICES

Tel: (02) 9954 9885

Shop 8.06, Northpoint, Nth Syd

www.cdroms.com.au

PC Memory

128 MB - \$154
256 MB - \$275
512 MB - \$475

Laptop RAM

IBM, Compaq, Gateway,
Dell, HP, Toshiba Sony

Printer RAM

All major models

D-camera RAM

Gateway RAM

Call for all Gateway
models

Old Memory

Call for 72 pin modules

Server RAM

Call for RAM for Sun, Cisco

Used Laptops

Call for details
All prices are subject to
change without notice

Laptop Battery

All major laptop
models, Call.

Laptop HDD

For IBM, Compaq,
Gateway, DELL, HP,
Toshiba, Sony

Laptop Modem

All major models

Laptop N/W

All major models

HDD

10 GB - \$198
20 GB - \$264
30 GB - \$395

SCSI HDD

9.1 GB - \$495
18 GB - \$880

Accessories

Monitors, Graphics
Cards, Modems,
CDRWs

PERFORMANCE MEMORY & PERIPHERALS

G1, 109, Alexander Street, Crows Nest NSW 2065. Tel: 02-99064533 Fax: 02-99061671

www.performancememory.com.au

RITE PRICE COMPUTERS WONTHAGGI PTY LTD

A.B.N. 97090 017 968 PO BOX 539 OR 13 BILLSON ST, WONTHAGGI VIC. 3995 PH: (03) 5672 4887

PHONE: (03) 5672 4887 OR FAX: (03) 5672 4410 Web Page: www.rpcomputers.com.au

HOURS 9.00AM TO 5.00PM MON-FRI 9.00AM TO 12.00PM SAT

MOTHERBOARDS AT ATX S57-SC-9-60C370		Phone	30 GB WESTERN DIGITAL ULTRA 100 5400 RPM	\$218	HP 1200 LASER PRINTER 8000PI 14PPM A4	\$763	MAGIC DVD DECODER CARD MPEG-2 PCI	\$146	AMD DURON 750MHz 64MB ATX ASUS MB	\$1,238
SUPER SOCKET 7 M-AMBI A PCI AT		\$163	30 GB WESTERN DIGITAL ULTRA100 7200RPM	\$219	HP 1200 SCANNER ATTACHMENT	\$252	VIDEO LOGIC MPEG-2 DVD CARD PCI	\$163	AMD DURON 800MHz 64MB ATX ASUS MB	\$1,257
PENT II MB PCI100 ATX M750M TINT2		\$189	30 GB SEAGATE ULTRA 100 7200RPM	\$313	HP 2200 LASER PRINTER 12000PI 18PPM A4	\$1,562	REAL MAGIC DVD DECODER REMOTE CONTROL	\$48	AMD DURON 900MHz 64MB ATX ASUS MB	\$1,285
PENT II MB G4600T5 64-60C37-4X ATX 133MHz		\$175	40 GB SAMSUNG HD ULTRA100 5400 RPM	\$248	HP OFFICE JET T55C SCANCOPY/PRINT	\$532	PROKIT GONY 320x120x100mm SCSI CD-RW KIT	\$532	AMD THUNDERBOLT K7-1500 64MB ATX ASUS MB	\$1,401
ATHLON MB ASUS K7A 1.5 ATX 500T		\$182	40 GB WESTERN DIGITAL ULTRA100 5400RPM	\$254	HP OFFICE JET T55C SCANCOPY/PRINT	\$542	SONY 320x120x100mm INT. IDE DRIVE ONLY	\$381	AMD THUNDERBOLT K7-1500 64MB ATX ASUS MB	\$1,401
ATHLON MB ASUS ATX100 1000 SOCK A		\$312	40 GB SEAGATE ULTRA 100 5400 RPM	\$257	HP OFFICE JET T55C SCANCOPY/PRINT	\$570	SONY 320x120x100mm INT. IDE DRIVE ONLY	\$381	AMD THUNDERBOLT K7-1500 64MB ATX ASUS MB	\$1,401
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	HP OFFICE JET T55C SCANCOPY/PRINT	\$573	PANASONIC CD-RW 320x120x100mm IDE DRIVE	\$254	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	CD-R 320x120x100mm INT. IDE DRIVE WITH S.W.	\$260	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIGITAL ULTRA100 7200RPM	\$373	EPSON STYLUS COLOR 880 720x720 DPI	\$173	MITSUBISHI 320x120x100mm IDE CD-RW KIT	\$351	PENT III MB 64MB 20.4.4 MB AGP 5.0 ATX	\$1,354
ATHLON MB ASUS ATX100 1000 SOCK A DDR		\$330	40 GB WESTERN DIG							

**To advertise
contact
Nima Price**

(02) 9288 9151

nprice@acp.com.au

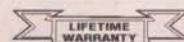
**A complete range of
memory and accessories for
Cameras,
MP3 Players
& PDAs.**

32MB SanDisk CompactFlash \$97
32MB SanDisk MultiMediaCard \$144
128MB SmartMedia Card \$355
USB CompactFlash & SmartMedia Reader \$102
More in stock...

**Order on-line from our website...
www.flashmemory.com.au**

MEMORY and CD-ReWritables

Picoh 8x8x32 CD-ReWritable (1 yr Warranty)	294	\$	SDRAM		
MANUFACTURERS/MODELS/SIZES			64Mb (8x64) PC133		\$66
Apple - G3/G4 Desktop	250mb	275	64Mb (8x64) PC100		\$66
Compaq - Armada M300, M700	128mb	225	128Mb (16x64) PC133		\$114
Compaq Presario 1270/1092	128mb	223	128Mb (16x64) PC100		\$131
Gateway - Solo	64mb	125	256Mb (32x64) PC133		\$240
HP Laserjet 8000	64mb	140	512Mb (64x64) PC133		\$671
IBM - PC300GL	128mb	149	NOTEBOOK SDRAM		
IBM - Aptiva 2164	128mb	131	64Mb (8x64) PC100		\$104
IBM - Thinkpad 600X, 570E	128mb	223	128Mb (16x64) PC100		\$148
Toshiba - 8000 PIII	128mb	223	SIMMS 72 PIN		
Toshiba - 4270/G4D	128mb	223	16Mb EDO 60ns		\$61
Toshiba - Sat Pro 4300 Series	32mb	393	32Mb EDO 60ns		\$139
Toshiba - Tecra 8000	128mb	219	SIMMS 30 PIN		
			4Mb Parity		\$22



PELHAM Pty Ltd

www.pelhampt.com.au
Overnight delivery \$11. Credit cards welcome.
Prices subject to change, please call for latest.
Prices valid as at 27/05/2001
PH: (02) 9980 9980 FAX: (02) 9980 9991
E-mail: ram@pelhampt.com.au
1/100 Yarrara Rd,
Penrith Hills, NSW 2120



INKJET CARTRIDGE REFILL KITS

Have confidence in the WORLDS BEST refill kits

Our refill kits Save up to 80 % on printing costs

BLACK REFILL KITS FROM \$24.90

Printer - REFILL KITS

HP DESKJET 600/610/640/660/670/690/692/694 photo
HP DESKJET 930/970 CX SERIES PLUS MORE / PHOTO SMART moon & star cartridge
HP DESKJET 710/720/750/870/880/890/893 & MORE
CANON BJ-30 / BJ-50 / BJ-70 / BJ-80
CANON BC-01 / BC-02 / BC-03 / BC-05 / BJ10E/BJ200/BJC210/240/255sp plus more
CANON BJ-300/BJ-330
CANON BC-20/BJC121C/2000/4000/4100/4200/4310/4550 & BC-22 photo kit
CANON BJ-600/610/620
CANON BJ-600/820/880
CANON BJC-5000/5100/5500/BC-23 (PIGMENT) BC-121C Ask about 8200
CANON BJC-6000/BJC-3000/BJC-6500/BC-30/BC-31
CANON BJC-6000 PHOTO KIT / BC-32 ask about 3000 photo kit
CANON FLUORESCENT BC-29F
CANON BJC-7000/7100/BC-80/OPTIMISER NK/BC-161
CANON BJC-7000/BJC-7100/BC-82/ PHOTO KIT
CANON BJC-8200/BK-5BK/BC-9M/BC-5Y/BC-5Y Photo
EPSON SMART CHIP PRINTERS 670, 777, 870, 880, 890, 1270, 1280 PHONE FOR KIT CODE
EPSON STYLUS COLOR 800 /1520
EPSON STYLUS 800/800+/1000/400/300
EPSON COLOR/COLOR PRO/XL SERIES
EPSON STYLUS COLOR 300 FOUR COLOR KIT
EPSON STYLUS 200/COLOR11/11S SERIES, 820
EPSON COLOR STYLUS 400/800 SERIES
EPSON STYLUS COLOR 440/460/640/660/670
EPSON COLOR 740/750/760/800/880/1160/1200 Bk only
EPSON STYLUS COLOR 900T-003T-005
EPSON STYLUS COLOR 500
EPSON COLOR 3000/5000 1 X KIT PER COLOR
EPSON STYLUS COLOR 480/580T-013T-014
EPSON STYLUS PHOTO 700/EX700/720/750/1200
LEXMARK IBM4076/1020/2030/2050/2070/1000/1100
LEXMARK IBM2030/2050/ PHOTO
LEXMARK 3200/5700/5770/7000/7200/211/213/waterproof
LEXMARK 3200/5700/5770/7000/7200 photo/bk w/wproof
LEXMARK Z12 / Z22 / Z32 (black-waterproof)
LEXMARK Z42 / Z51 (black-waterproof)
BROTHER MFC-7150 / 7160 / LC02BK / M/CY
SAMSUNG M10 SERIES
OLIVETTI JP 150/250/350/380/450/EX2035/3100
CLEANING KIT - Hewlett Packard, Canon, Lexmark only
IF YOUR PRINTER IS NOT LISTED PLEASE PHONE US AS WE HAVE MANY MORE KITS

COLOUR REFILL KITS FROM \$34.90

Number of Black fills	CODE	Number of COLOUR fills	CODE	DESCRIPTION - CARTRIDGES	CODE	R.R.P
8	K2BK	12	K10CLR / K14CLR	CANON BJC-600/BJC-700/BJC-80	423K	\$8.80
6	K3BK	12	K43CLR / K25CLR	CANON BJC-600/BJC-700/BJC-80	423A	\$13.20
6	K3BK	6	K22CLR	CANON BJC-600/BJC-700/BJC-80 HFC	423K	\$11.00
60	K7BK	30	K1CLR	CANON BJC-600	2031K	\$8.80
6 of 8	K8BK/K4BK	6	K2CLR	CANON BJC-600 two per pack	4096K	\$15.40
7	K9BK			CANON BJC-6002 X.Y / M / C	4096	\$13.00
6 of 60	K12BK	30	K5CLR / K18CLR	CANON BJC-600 HFC - CAPACITY	4097K	\$8.90
12	K10BK	6	K3CLR	CANON BJC-800 Black / yellow / cyan / mag	2290	\$14.30
6	K11BK	6	K4CLR	CANON BJC-4000	4136K	\$9.90
6	K27BK	30	K5CLR	CANON BJC-4000	4132A	\$13.90
12	K28BK	6	K35CLR	CANON BJC-6000	3487K	\$16.90
		6	K36CLR	CANON BJC-6000 magenta / cyan / yellow	3487	\$11.90
		6	K21CLR	CANON BJC-6000 Photo HFC / C / M	3488P	\$11.90
2	K19BK	6	K24CLR	EPSON STYLUS COLOR	4122K	\$14.30
		6	K15CLR	EPSON STYLUS COLOR II / 820	4237K	\$12.00
12	K33BK	6	K39CLR	EPSON STYLUS COLOR 400/500/600/700	4333K	\$16.50
12		6		EPSON STYLUS COLOR 440/460/640/660/670	2556K	\$17.60
12	K13BK	6	K20CLR	EPSON STYLUS COLOR 480 / 580	7001K	\$16.00
12	K14BK	6	K6CLR	EPSON STYLUS COLOR 480 / 580	7001A	\$25.00
12	K15BK	6	K6CLR	EPSON STYLUS COLOR 870 / 875 / 880	7002K	\$20.00
		6	K33CLR	EPSON STYLUS COLOR 870 / 875 / 880	7002A	\$29.90
12	K16BK	12	K8CLR / K7CLR	EPSON STYLUS COLOR 870 / 875 / 880 IIJS	7002Z	\$69.90
12	K17BK	12	K20CLR	EPSON STYLUS COLOR 740/760/860	2557K	\$18.70
12	K28BK	12	K16CLR	EPSON STYLUS COLOR 900	2729K	\$22.00
12	K6BK	12	K16CLR	EPSON STYLUS 800	4071K	\$12.20
12	K29BK	12	K37CLR	EPSON COLOR 800/850/920	4413K	\$14.40
12	K17BK	12	K8CLR	EPSON STYLUS COLOR 1500	4151K	\$26.40
3	K21BK	3	K34CLR	EPSON 900T0	4130K	\$20.00
12	K31BK	12	K40CLR	EPSON STYLUS COLOR / COLOR PRO	4123A	\$24.20
12	K17BK	12	17CLR	EPSON STYLUS COLOR II / PRO	4208A	\$42.00
6	K24BK	12	K13CLR	EPSON STYLUS COLOR 50	4134A	\$22.00
		12	K29CLR	EPSON STYLUS COLOR 400/500/600/700/800/900/1000	4414A	\$24.20
6	K25BK	12	K30CLR	EPSON STYLUS COLOR 440/460/640/660/670	2558A	\$26.40
6	K25BK	12	K32CLR	EPSON STYLUS COLOR PHOTO 720	4412A	\$29.70
6	K25BK	12	K30CLR	EPSON STYLUS COLOR 900 / 980	2769A	\$24.00
6	K25BK	12	K41CLR	EPSON STYLUS COLOR PHOTO EX / 700	4412A	\$26.00
6	K30BK	6	K38CLR	EPSON STYLUS COLOR 1270 IIJS	7003Z	\$55.00
10	K25BK	12	K30CLR	EPSON STYLUS COLOR 1270	7003A	\$16.00
6	K20BK	6	K19CLR	EPSON STYLUS COLOR 1200	2769P	\$26.00
	K1Z			EPSON STYLUS COLOR 3000 / 5000 HFC / C / M / Y	4448	\$22.00

Visit our web site
www.easysrefills.com.au



CODE	PRODUCT DESCRIPTION	PAPER	SHEETS	R.R.P
14120-1	ARTIST WATER COLOR PAPER 200GSM EMBOSSED PATTERN	A4	20	\$21.90
24120-8	PREMIUM QUALITY PHOTO GLOSS LAS PAPER 260 GSM	A4	25	\$49.90
31120-3	PHOTO GLOSSY WHITE FILM (100UM)	A4	20	\$25.20
26115-2	PHOTO GLOSSY PAPER 180GSM MAKES ANY INK WATERPROOF	A4	20	\$27.40
25115-3	PHOTO GLOSSY GREETING CARDS W/IE WATER RESISTANT	A4	15	\$19.70
12108-3	TRANSPARENCY FILM (100UM)	A4	15	\$21.90
11108-2	SILVER REFLECTIVE FILM (150UM)	A4	8	\$21.90
13208-7	ARTIST CANVAS (200GSM)	A4	8	\$21.90
24110-8	POLY SILK ADHESIVE BACKED FABRIC (100GSM)	A4	8	\$21.90
24110-8	CLEAR WINDOW DECAL - STICKS TO GLASS	A4	8	\$21.90
27139-6	T-SHIRT EASY IRON ON TRANSFER PAPER-PEEL OFF WHEN COLD	A4	10	\$21.90
13105-9	HI RESOLUTION PREMIUM MATTE PAPER - WATER RESISTANT	A4	100	\$16.50
14103-4	BANNER PAPER/ EACH BANNER UP TO 4.2 METRES LONG X A4 WIDE	A4	5	\$21.90
14210-9	DESIGN A MAG - FRIDGE MAGNETS	A4	3	\$21.90
13708-2	CD LABEL (STARTER KIT) SOFTWARE & 2 SAMPLES OF EACH TABLE	6.25 X 11	10	\$39.50
13810-3	CD LABELS (RAINBOW REFILL)	6.25 X 11	8	\$27.50
13810-2	CD LABELS (GALAXY REFILL)	6.25 X 11	10	\$27.50
13810-1	CD LABELS (STARBURST REFILL)	6.25 X 11	10	\$27.50
14110-2	CD LABELS (CRYSTAL REFILL)	6.25 X 11	10	\$27.50
14010-5	CD LABELS (PHOTO GLOSSY REFILL)	6.25 X 11	10	\$27.50
24103-1	DESIGN A MAGNETIC - BUSINESS CARD	A4	3	\$30.50
13418-1	BUSINESS CARDS 2 SIDED GLOSSY-MATTE	216 x 297	20	\$29.90

P.O. Box 1042 Capalaba, Qld. 4157
26 Guyana Court, Capalaba
PH. 61 07 32454700
Fax 07 32454160
Direct credit details National Bank,
Branch: Capalaba, Qld.
A/C: 084 129 46267 5045
Email: sales@easysrefills.com.au

Web site: www.easysrefills.com.au

AUSTRALIA WIDE DELIVERY • SAME DAY DISPATCH



local • CALL 1300 730018

WWW.easysrefills.com.au

FREE DELIVERY*

GeForce2 Power



- NVIDIA Second generation T&L engines
- 256-bit graphics architecture
- Direct X and Full OpenGL 1.2 3D support
- Direct X Texture Compression & S3TC support
- Integrated 350MHz RAMDAC
- Resolution up to 2048x1536, True color @ 60MHz

For your nearest dealers

NSW

ABet Computer	(02) 8850 6677
CR Computer	(02) 9882 3535
Espco Computer	(02) 9906 3100
First Tech	(02) 9266 0699
Informtech	(02) 9649 8133
I Store	(02) 9389 8255
Nepean System	(02) 4721 7566
Sunstar Tech	(02) 9893 9688
Sydney PC & Part	(02) 9299 3939

VIC

Belmont Computer	(03) 5241 6188
Comnet Tech	(03) 9326 6980
H-Technology	(03) 9534 3225

WA

IVC Computer	(08) 9791 2113
Syncho Computer	(08) 9361 8033
Trinix Business	(08) 9356 1600

QLD - Brisbane

Advance Computer	(07) 3217 8300
C-Systems Int.	(07) 3263 1888
First Technology	(07) 3216 0885

QLD - Gold Coast

First Technology	(07) 5597 5486
------------------	----------------

S.A.

Aeon (KB) Comp	(08) 8374 4500
Leader Computer	(08) 8221 6222

**LOOKING TO
SERVICE YOUR PC?**

**LOOK TO THE PEOPLE
WHO BUILT IT.**

You didn't compromise on quality when you invested in Compaq technology, now there's no reason to when you're servicing or upgrading your PC.

Compaq Service Centres, Australia-wide, are all run by Compaq-trained technical specialists. They are all up to date with the very latest developments and have priority access to genuine parts and peripherals.

So whether it's memory, hard disks, storage, printers, scanners or just a service, contact the people who know your PC best.

SERVICE/UPGRADES/SUPPORT/SALES

CALL 1300 721 021

or visit www.compaq.com.au/pcservice

**SERVICE
CENTRE**

COMPAQ

Compaq is a registered trademark of Compaq Computer Australia Pty. Limited and company names are the property of their respective owners. Prices may vary between locations and change without notice. COM3504/APC

Which PDA is Best for you???



TOTAL DATA CAPTURE

Personal Computing Solutions



Call 7 days a WEEK!!

sales@totaldc.com.au

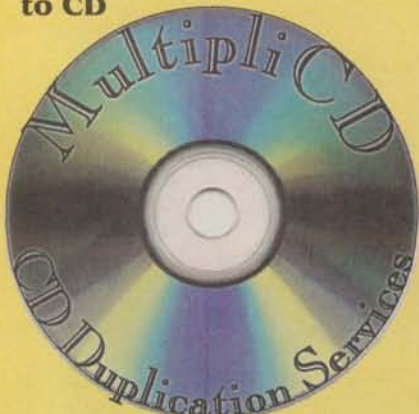
1800 800 772

www.totaldc.com.au



CD Duplication

- * Competitive pricing
- * Quick turn around
- * Any quantity available
- * Full verification offered
- * Business card CDs
- * Conversion of VHS video to CD



www.duplication.com.au
info@duplication.com.au

Tel: 03 98897946

Fax: 03 98094842

CD COPYFAST

- ▶ PROFESSIONAL CD-ROM DUPLICATION SERVICES
- ▶ UP TO 5000 DISCS IN 24-HRS !
- ▶ SILKSCREEN FULL COLOUR PRINTING
- ▶ CUSTOMISED PRINTING ON BLANK CD-R
- ▶ FLOPPY DISK DUPLICATION
- ▶ SAME DAY SERVICE AVAILABLE

DiskMax Technology Pty Ltd (02) 9699 3333 sales@diskmax.com.au

**To advertise
contact
Nima Price**

(02) 9288 9151

nprice@acp.com.au

www.stroudco.com

**Want to Save 95% on printing
Fix common printing problems
Free delivery**

**Fast Service and same day despatch
Free Inkjet Refills secrets with order
Fully qualified support team**

BULK INK AVAILABLE

BLACK REFILLS from only \$28.00

PRINTER	NO. OF FILLS	KIT NO
CANON BJ30/50/70/80/85 BCI-10/11 BK	30/80	C10
CANON BJ10/BJ200/BJ210/BJ210sp/BJ255sp	7	C2/C2A
CANON BJC600/610/620	15	C5
CANON IJC2000/4000/4200/4550 BCI-21/20	50/8	C8
CANON BJC 3000/6000/6500	6	C19
CANON BJC 7000/7100	6	C15
HP DESKJET 400, 500 & 600 SERIES	7	H2/H4
HP DESKJET 700/800/900/1100/1200 SERIES	6	H13
HP DESKJET 1200 B, Y, C, M	6	H8
EPSON STYLUS COLOUR 750/900/1200	12	E#
EPSON STYLUS 400/800/1000	8	E1
EPSON STYLUS COLOUR / PRO / XL	6	E2
EPSON STYLUS 820 / COLOUR 11/11S/200	12	E4
EPSON COLOUR 400/500/600/700/Photo Fax	12	E7
EPSON COLOUR 440/640/740/800/850/1520	12	E7
EPSON STYLUS COLOUR 750/900/1200	12	E14
EPSON STYLUS COLOUR 680/777/870/1270	12	E18
IBM 4076/LEXMARK	6	M1
LEXMARK 3200/5000/7000/Z SERIES	5	M5

COLOUR REFILLS from only \$38.00

PRINTER	NO. OF FILLS OF EACH COLOUR	KIT NO
CANON BJC 3000/6000/6500/8500	5	C20
CANON BJC 50/70/80/85	60	C11
CANON BJC210/BJC210sp/BJC255sp	12	C3
CANON BJC600/610/620	8	C6
CANON BJC4000/4100/4200/4550 BCI-21	30	C9
CANON BJC 7000/7100	6	C16
HP DESKJET 400, 500 & 600 SERIES	12	H3/H5
HP DESKJET 700/800/900/1100/1200 SERIES	7	H14
EPSON STYLUS COLOUR / PRO / XL	6	E3
EPSON STYLUS 820/COLOUR/11/11S	12	E5
EPSON COLOUR 200/400/500/600/800/1520	12	E#E19
EPSON COLOUR 440/480/580/640/740	12	E9
EPSON STYLUS COLOUR 680/777/870/1270	12	E19/E20
IBM 4076/LEXMARK	12	M2
LEXMARK 3200/5000/7000/Z SERIES	12	M6

**Complete range of Black
colour & photokits
Enquiries/Order on Secure website
or credit cards,
money order, cheques, COD**

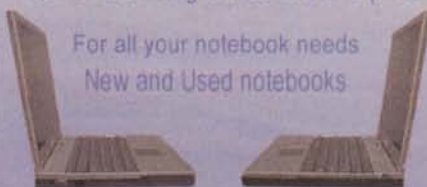
Stroudco

Specialist in Inkjet Solutions
www.stroudco.com
[email: ink@stroudco.com](mailto:ink@stroudco.com)
Ph/Fax: (03) 9879 2800

Opening Hours: 9am - 6pm, 7 days



Combination of great service and price



For all your notebook needs
New and Used notebooks

ALTIMA COMPUTERS P/L

4/48 Park Road, Cabramatta, NSW 2166



Tel: (02) 9755 7835
Fax: (02) 9755 7917
www.altimaco.com.au
www.altimaco.com

Web Site Hosting

Everything you need to
build a successful
Website



- integrated ecommerce
- maximum reliability
- technical support
- control panel
- friendly service
- affordable plans

from
\$14.95
per month

free trial
available !!

- 50mb of webspace
- yourdomain.com.au
- MS FrontPage™ 2000
- instant account setup
- pop3 email accounts
- 128bit secure server
- email forwarding
- mysql database
- full ftp access
- 99.9% uptime
- 30 day guarantee
- resellers welcome



Server101.com
webhosting & ecommerce

ph: 07 3876 6101
fax: 07 3876 3101
www.server101.com
info@server101.com

Call us today or
visit our website to
enquire about our
current specials

UPSONIC

protection against
power disturbances

- SYSTEM DOWNTIME
- DATA CORRUPTION
- HARD DISK CRASHES
- MONITOR LOCK-UPS
- COSTLY SOFTWARE REBUILDS



PROTECT YOUR INVESTMENT WITH AN UPSONIC from 350 VA to 550 kVA

FREECALL 1800-634-307

Specialists in
Uninterruptible Power Supplies
Power Conditioners and Filters
Proudly Australian Owned and Operated

www.upsonic.com.au

UPSONIC

POWER

PC SUPERMARKET

CD AND ONLINE

For advertising details contact Nima Price on (02) 9288 9151

COMPANIES INSIDE

• Accsoft • Linux Systems Labs • Parallel Solutions & Distribution • Webtrader



Fast, Reliable and Secure when it counts.

Webtrader has thousand's of customers from around the globe, hosting sites for web developers, resellers and companies large and small who demand performance and reliability from their web hosting provider.

Visit: <http://www.webtrader.net.au>



Simple, Cost Effective e-Commerce Solution.

Webtransaction provides merchants with an easy to use, secure credit card processing option for multiple types of online stores. From simple one page stores to large product catalogs, Webtransaction does it all. *Applicable Discounts For all Webtrader Hosting Clients.**

Visit: <http://www.webtransaction.com.au>

SPECIAL HOSTING OFFER :

- 25MB Disk Space
 - Free Domain Registration
 - Free Search Engine Submission
 - Includes - ColdFusion, ASP, CGI Bin, SQL,
 - Frontpage and SSL
 - Control Panel
 - Reseller Packages
 - Dedicated Servers Available
- FREE SETUP***

From **\$18.75** MTH
Ph: 1300 301015

Copyright © 1997-2000, Webtrader Pty Ltd. All Rights Reserved. WorldWide.

*SEE TERM AND CONDITIONS ON WEBSITE

ParallelOnline

www.parallelonline.com.au

Phone: 1300-134-324

Fax: 1300-134-330

Email: sales@parallelonline.com.au

Real People, Real Service, Real Products.

Proud suppliers of



AGFA

DELL

Kodak

intel

COMPAQ

IBM

iomega

Seagate

EPSON



Great Deals On
Seagate and Western
Digital Disk Drives



Linux BSD BeOS



Linux System Labs Australia

Phone : (03) 9857 5918
Fax : (03) 9857 8974

www.lsl.com.au

• OnMyWeb • net

The dawn of a new era

It's a game of Quick and Slow, not Big and Small!
Put your business online, not on the line!
Not just a web site, OnMyWeb Site!

We don't just give you tools, we do it for you.
We build your web site, and host it online.
We place your site under busy traffic, so business comes quick.
We process your online money, with bullet proof security.
We help in order fulfilment, as well as management.
We let you take control, which areas at your site visitors can go.
We connect you to the net, and show you what to do step by step.
We are talking about a piece of cake, not an arm and a leg.

Simply Experience the Difference

<http://www.onmyweb.net>

Suite F1 Citymark Bldg, 683-689 George St, Sydney NSW 2000
Tel: (02) 9281 8163 Fax: (02) 9281 8621

Open 7 Days



A subsidiary of
Accsoft Internet Services



Providing Quality Internet
Services Since 1995
with access points in all states
and territory around Australia

BusinessTotalConnect

Permanent Line: 24 hrs ISDN/Modem
Office Saver: 12 hrs/day option
name@yourcompany.com.au
www.yourcompany.com.au

Dial-up 56K Access

Reliable and fast
No download limit
On-web mail access
6 e-mail addresses per user
Prepaid by hours, no use-by date
with frequent user bonus, or
Prepaid by months, all you can surf

<http://www.accsoft.com.au>

Please check our web site or ring
for coverage and service details.

www.ticomputers.com.au

Trinity International Computers PH: 02 9437 5437 FAX: 02 9437 5468

SHOP 5 10-12 Clarke Street Crows Nest NSW 2065 Email: sales@ticomputers.com.au

TI Value Pack Intel Pentium III 800C \$985 Intel Pentium III 866 \$1,175 Intel Pentium III 933 \$1,220 Intel Pentium III 1G \$1,248 ASUS CUSI-M Motherboard Shared 16Mb on board SVGA 64Mb SD RAM PC133 Apacer Deluxe Minitower Case ATX 3.5" FDD Panasonic 20GB HDD Seagate ATA100 Ps II Windows 2000 Keyboard Ps II Mouse & Pad 50x Acer CD & Speakers 15" Samsung Monitor Integrate PCI 3D Sound Card Integrate 10/100 Network	TI Weekly Special Pentium II 800 C \$1,110 Pentium III 866 \$1,299 Pentium III 933 \$1,345 Pentium III 1G \$1,375 Gigabyte 6VXC7-4XP ATA100 128Mb SD RAM PC133 Apacer 20GB HDD Seagate ATA100 3.5" FDD Panasonic 8Mb S3 AGP SVGA Card Deluxe Tower ATX Case PS II Keyboard & Mouse 15" Samsung Monitor 50 Speed Acer CD-ROM PCI 3D 4 Channel Sound 56K Internal Fax Modem Amplified Stereo Speakers	TI Business Pack Pentium II 800 C \$1,130 Pentium III 866 \$1,315 Pentium III 933 \$1,365 Pentium III 1G \$1,395 Intel EEA2L 815 Chipset M/B Built in SVGA & Intel 10/100 20GB HDD Seagate ATA100 3.5" FDD Panasonic 128Mb SD RAM PC133 Apacer Deluxe Tower ATX Case PS II Keyboard & Mouse 15" Samsung Monitor 50 Speed Acer CD-ROM 3D Integrated Sound Card 56K Internal Fax Modem Amplified Stereo Speakers	Compaq Presario1200 P700C 64M/6G 24xCD 12.1" TFT 56k W ME \$2,850 Presario1200 PIII750 64M/10G 24xCD 13.3" TFT 56k W ME \$3,265 Presario1700 PIII850 64M/10G 24xCD 13.3" TFT 56k/10/100 W98 \$3,480 Presario1700 PIII650 64M/12G 8xDVD 14.1" TFT 56k W98 \$3,735 Presario1700 PIII750 128M/20G CD-RW 14.1" TFT 56k 10/100 W98 \$4,465 Presario 1700 PIII850 128M/20G 8xDVD 14.1" TFT 56k 10/100 W98 \$4,715 Presario1400 PIII 800 128M/10G 8xDVD 13.3" TFT 56k 10/100 W ME \$4,145 Presario 800 PIII 650 128M/12G 24xCD 12.1" TFT 56k 10/100 W ME \$4,250 Compaq 110s P700C 10G/64M 24x CD 12" TFT 56k W98 \$2,580 Armada E500 PII 700C 64M/5G 24xCD 13.3" TFT 56k W 98 \$3,465 Armada E500 PII 600C 64M/5G 24xCD 13.3" TFT 56k W 2k \$3,435 Armada E500 PII 800 64M/10G 24xCD 14" TFT 56k 10/100 W98 \$4,245 Armada E500 PIII 800 64M/10G 24xCD 14" TFT 56k 10/100 W 2k \$4,395 Armada E500 PIII 850 128M/20G DVD 15" TFT 56k 10/100 W98 \$5,350 Armada E500 PIII 850 128M/20G DVD 15" TFT 56k 10/100 W 2k \$5,565 Armada E500 PIII800 64M/10G DVD 13.3" TFT 56k 10/100 W98 \$4,225 Armada E500 PIII800 64M/10G DVD 13.3" TFT 56k 10/100 W2k \$4,399
TI AMD Pack AMD Duron 850 \$1,515 AMD K7 900 \$1,625 AMD K7 1G \$1,685 AMD K7 1.2G \$1,740 ASUS ATX 133 Deluxe M/B 3.5" FDD Panasonic 128Mb SDRAM PC133 Apacer 30GB IBM 7200rpm HDD A-Open Deluxe Tower Case 15" Samsung Monitor 32Mb Riva TNT II AGP Ps II Keyboard & Mouse 50 Speed CD-ROM Acer Creative VB128 Sound Card 56K Internal Fax Modem 600W Subwoofer Speaker	TI Deluxe Pack Pentium II 800 C \$1,355 Pentium III 866 \$1,545 Pentium III 933 \$1,590 Pentium III 1G \$1,620 Gigabyte 6VXC7-4XP ATA100 128Mb SD RAM PC133 Apacer 40GB IBM 7200rpm ATA100 3.5" FDD Panasonic 32Mb RIVA TNT II AGP Deluxe Tower ATX Case PS II Keyboard & Mouse 15" Samsung Monitor 50 Speed Acer CD-ROM Creative VB128 Sound 56K Internal Fax Modem 600W Subwoofer Speaker	TI Game Pack Intel PII 800C \$1,830 Intel P III 866 \$1,820 Intel P III 933 \$1,860 Intel PIII 1000 \$1,885 ASUS CUSL2-C Intel815 M/B 128Mb SD RAM PC133 Apacer 40GB IBM 7200rpm HDD 1.44Mb 3.5" FDD Panasonic 32Mb Leadtek GeForce II MX 200 A-Open KF45 Mid Case Ms Internet KB & Intellimouse 15" Samsung Monitor 50 Speed Acer CD-ROM Creative Live! Sound Card 600W Subwoofer Speakers 56K Internal Fax & FIM	Toshiba Satellite 1730XCDT P650C 64M/10G 24xCD 13.3" TFT W ME \$2,475 Satellite Pro4330XCDT P 650C 64M/10G 24xCD 14.1" TFT 56k W98 \$3,125 Satellite Pro4330XCDT P650C 64M/10G 24xCD 14.1" TFT 56k W2k \$3,325 Satellite Pro4600 PIII650 64M/10G 8xDVD 14.1" TFT 56k W98 \$4,066 Satellite Pro4600 PIII650 64M/10G 8xDVD 14.1" TFT 56k W2k \$4,245 Satellite Pro4600 PIII700 128M/20G 8xDVD 14.1" TFT 56k W98 \$4,680 Satellite Pro4600 PIII700 128M/20G 8xDVD 14.1" TFT 56k W 2k \$4,880 Satellite Pro4600 PIII800 128M/20G 8xDVD 15.1" TFT 56k 10/100 W98 \$5,490 Satellite Pro4600 PIII800 128M/20G 8xDVD 15.1" TFT 56k 10/100 W2k \$5,685 Portege 3490CT PIII700 128M/20G 11.3" TFT 56k 10/100 W98 \$4,760 Portege 7220CTe PIII650 64M/12G Free Docker 56k 13.3" TFT W98 \$4,785 Tecra 8100 PIII 750 128M/12GB 8xDVD 56k 14.1" TFT W98 \$6,245 Tecra 8100 PIII 750 128M/18G 8xDVD 56k 14.1" TFT W2k \$6,450 Tecra 8100 PIII 850 128M/20G 8xDVD 56k 14.1" TFT W98 \$6,795 Tec 8200 PIII 1G 256M/20G 8xDVD CD-RW 56k 10/100 14.1" TFT W98 \$9,385 16C 6200 PIII 1G 256M/20G 8xDVD CD-RW 56k 10/100 14.1" TFT W2k \$9,525
TI P4 Dream Pack Pentium 4 1.4Ghz \$2,150 Pentium 4 1.5Ghz \$2,280 Pentium 4 1.7Ghz \$2,500 Intel Pentium 4 D850GB Intel Rapid Bios 4 xUSB Intel 10/100 Network 128Mb RD RAM Samsung 40Gb IBM 7200rpm ATA100 3.5" FDD Panasonic Pentium 4 Midtower Case 32M Leadtek GeForce II MX200 MS Internet KB & Intellimouse 15" Samsung Monitor 50 Speed CD-ROM Acer Creative VB128 Sound Card 600W Subwoofer Speakers	TI SB Server Pack Dual PIII 866 x 2 \$2,225 Dual PIII 933 x 2 \$2,330 Dual PIII 1G x 2 \$2,399 Abit VP6 Dual IDE M/B ATA100 Dual CPU PC133 & 4x AGP 3.5" FDD Panasonic 256Mb SD RAM PC133 Apacer 40Gb IBM 7200 ATA100 8Mb AGP SVGA Card A-Open Fulltower 300W PS II Keyboard & Mouse 15" Samsung Monitor 50 Speed CD-ROM Acer Intel 10/100 PCI Network	TI Pro Server Pack Dual PIII 866 x 2 \$3,190 Dual PIII 933 x 2 \$3,279 Dual PIII 1G x 2 \$3,330 Intel STL2 Dual CPU Server Motherboard U160 SCSI & 10/100 NIC 3.5" FDD Panasonic 256Mb SD RAM PC133 Apacer 8Mb AGP SVGA Card 18Gb IBM 10,000rpm SCSI Ultra 160 SCSI HDD A-Open Fulltower 300W Ps II Keyboard & Mouse 15" Samsung Monitor 50 Speed CD-ROM Acer	Motherboard GA 60X Motherboard Intel 815 ATA100 AGP x 4 No SVGA & Sound on Board \$193 GA 60XE-1 Motherboard Intel 815 Chipset Socket 370 \$203 GA 60XE Motherboard Intel 815 Chipset Socket 370 \$232 GA 6VXC7-4X VIA Chipset Socket 370 Support AGP 4 \$160 GA 6VXC7-4XP VIA Chipset Socket 370 Support AGP 4 ATA 100 IDE \$165 GA VXDC7 VIA Chipset Dual Socket 370 IDE Motherboard \$225 ASUS Motherboard ASUS ATX133 Motherboard For AMD \$298 ASUS ATA266 Socket A SD RAM & DDR \$338 ASUS ATX266 Socket A 3x DDR \$358 ASUSTEK CUSL2 Intel 815 Chipset Motherboard ATA 100 \$299 ASUSTEK CUSL2-C Intel 815 Chipset Motherboard No SVGA \$245 ASUSTEK CUSI-M Built in SVGA & Sound & 10/100 NIC \$169 ABIT VP6 Dual IDE Motherboard ATA100 AGP x 4 \$310 ABIT KT7A VIA 1 AGP 6 PCI 1 ISA 4DIMM M/B ATA100 \$269 ABIT KT7A-RAID 1 AGP 6 PCI 1 ISA 4DIMM Motherboard ATA 100 \$319
CPU Pentium 766 Celeron CPU \$162 Pentium 800 Celeron CPU \$175 Pentium III 866E Intel CPU \$368 Pentium III 933E Intel CPU \$418 Pentium III 1GB Intel CPU \$442 Socket to slots converter \$15 Pentium 4 1.4GHZ \$670 Pentium 4 1.5GHZ \$785 Pentium 4 1.7GHZ \$1,015 Duron Socket A 850MHZ \$159 Duron Socket A 900MHZ \$189 AMD K7 900 MHz CPU \$265 AMD K7 1G CPU \$325 AMD K7 1.2G CPU \$365 AMD K7 1.3G CPU \$439 Cooler Master For AMD \$25	Memory 64Mb SD Ram PC133 Apacer \$45 128Mb SDRAM PC133 Apacer \$69 128MB DDR PC2100 \$125 128MB SDRAM PC150 Kingmax \$99 256MB 168P SD Ram PC133 \$148 Memory for Notebook Compaq Toshiba Acer Dell \$115 Hard Drive 20GB Seagate 5400rpm HDD \$169 20GB Fujitsu 7200RPM \$225 40GB IBM 7200RPM ATA 100 \$325 60GB IBM 7200RPM ATA 100 \$445 75GB IBM 7200RPM ATA 100 \$505 SCSI HDD IBM 9Gb 10000rpm U160 \$395 IBM 18Gb 10000rpm U160 \$518 IBM 36Gb 10000rpm U160 \$930 Seagate Cheetah Cheetah 18Gb 10,000rpm U160 \$575 Cheetah 18Gb 15,000rpm U160 \$760 Cheetah 36Gb 10,000rpm U160 \$1,015 Cheetah 73Gb 10,000rpm U160 \$1,850	Monitor Hitachi 17" CM615 0.23dpt \$369 Hitachi 19" CM715 0.22dpt \$698 Hitachi 19" CM772 0.22dpt \$695 Hitachi 15" CML151XW LCD \$1,425 Hitachi 17" CML170SXW LCD \$2,495 Acer 17" Acanview \$358 Acer 17" Acanview G991 \$690 Acer 15" LCD With Speaker \$1,450 Mitsubishi 15" D1 View \$268 Mitsubishi 17" D1 View 1770 \$369 Mitsubishi 19" D1 View 1995 \$708 Mitsubishi 19" D1 View DV19NF \$1,020 Mitsubishi 21" D1 View 2107 \$1,590 Mitsubishi 15" DV150 LCD \$1,750 15" Samsung SyncMaster 550S \$249 17" Samsung SyncMaster 753DF \$470 21" Samsung 1100P \$1,599 15" Samsung 570s LCD \$1,699 17" Sony E220 0.24dpt Flat \$675 19" Sony G420 0.24dpt Flat \$1,215 21" Sony G520 0.24dpt Flat \$1,985 Sony SD-MM51 15" LCD \$2,035	Intel M/B Intel 815EPEA II With Sound \$240 Intel M/B Intel 815EEA2L With SVGA Sound Intel 10/100 Network Card \$282 Intel STL2 TUPELO Dual CPU Server Board SVGA U160 SCSI 10/100 Intel NIC \$1,150 Intel Pentium 4 M/B Intel 850 Chipset With Management ASIC \$375 SVGA Card 8Mb SIS PCI SVGA Card \$58 8Mb SIS AGP SVGA Card \$53 8Mb ATI AGP SVGA TV Out \$65 Matrox SVGA Card \$318 Matrox G450 32m Dualhead TV \$220 Power Colour SVGA Card \$220 32Mb RIVA TNT II M64 AGP \$95 32Mb RIVA TNT II M64 TV Out \$115 ASUS SVGA Card \$249 V7700 GeForce II 64m TV DDR \$470 V7700 GeForce II 64m DDR Ultra \$470 V7700 GeForce II 32MB DDR \$410 V7100 GeForce 32m GTS mx TV \$238 Leadtek 64Mb GeForce II GTS II Pro \$525 64Mb GeForce III GTS \$925 64Mb GeForce II Mx 400 \$315 32Mb GeForce II MX200 TV Out \$205 32Mb GeForce II MX 200 \$155 32Mb GeForce II MX Dualhead \$298 32Mb VX1 Gint R3 \$415 32M GVX1 Gint R3 \$1,185 64Mb GVX1 Pro Gint R4 \$1,950 Office Jet HP OfficeJet R65 \$855 HP OfficeJet T65 \$455 HP OfficeJet 725 \$355 HP OfficeJet 3150 \$1,099 HP Office G85 \$999 HP Office G95 \$1,425 Zip Driver 100Mb Internal Zip Drive \$28 250Mb Internal Zip Drive \$52 100Mb External Zip Parallel \$106 250Mb External Zip Parallel \$95 125Mb External Zip USB \$125 100Mb External Zip USB \$255
Hub Acer 8 Port 10 Mbps Hub BNC \$69 Netgear 8 Port 10/100 DS108 \$215 Netgear 16 Port 10/100 DS116 \$399 Netgear 16 Port 10/100 DS516 \$809 Netgear 24 Port 10/100 DS524 \$815 Switch Skylink 8 Port 10/100 Switch \$145 Netgear 5 Port Switch FS105 \$156 Netgear 8 Port Switch FS108 \$265 Netgear 8 Port Switch FS508 \$485 Netgear 16 Port Switch FS116 \$520 Netgear 16 Port Switch FS516 \$838 Netgear 24 Port Switch FS524 \$1,025 Printer Server Netgear PS105 \$228 Netgear PS110 \$256 Router Netgear RT311 \$325 Netgear RT314 \$395 Netgear RM 356Au 56K F/M \$545	Notebook HDD 2.5" Fujitsu 10GB 9.5mm \$239 IBM Travelstar 10GB IDE 9.5mm \$230 IBM Travelstar 20GB IDE 9.5mm \$345 IBM Travelstar 30GB IDE 9.5mm \$725 Scanner Mitsubishi DV648 Scanner USB \$125 HP3300 USB Scanner \$143 HP4300 Scanner \$178 Canon N940 Parallel Scanner \$139 Canon N650U USB \$185 Canon N1220U USB Scanner \$255 Canon N860U Film USB \$255 Epson 1640SU \$535 Epson 1640SU Photo \$675 Sound Card Audio Excel PCI 3D Sound \$49 Creative VB 128 PCI Sound \$92 Creative Live Value PCI Sound \$185 Live Digital Entertainment 5.1 \$185 Creative Live Platinum 5.1 \$130	CD-ROM/DVD 50 x CD-ROM Acer \$70 52 x CD-ROM Creative Remote \$68 Pioneer 16 x Speed DVD \$158 CD-Writer Mitsubishi 10x4x32 CD-RW \$248 Acer 12x8x32CD-RW \$299 Iomega USB 4x4 x CDW-RW \$540 Sony 12x8x32 CD-RW OEM \$288 Yamaha Firewire 8x8x24 for Mac \$529 Yamaha 8x8x24 SCSI External \$475 Yamaha 16x10x40 IDE CD-RW \$475 Yamaha 16x10x40 SCSI CD-RW \$565 Network Card Acer 10/100 PCI \$28 Dlink 10/100 PCI \$52 3 Com Etherlink XL 10/100 PCI \$106 Intel Ether Express 10/100 PCI \$95 Pcmcia 10/100 Kingmax real port \$125 Xicom 10/100 Real port Pcmcia \$255	Printer HP840 Colour \$169 HP840 Colour \$218 HP930C \$258 HP990C \$688 HP1220C A3 \$812 HP1200 Laserjet 14ppm \$740 HP2200D Laserjet 18ppm \$1,485 Canon BJC 55 \$530 Canon BJC 85 \$335 Canon BJC 1000 Colour \$105 Canon BJC 2100SP Colour \$138 Canon BJC 3000 Colour \$198 Canon BJC 5500 A2 Colour \$1,150 Canon BJC4500 A3 Colour \$375 Canon BJC8200 \$565 Canon BJC6500 A3 Colour \$565 Canon LBP 800 Laser \$465 Epson 480 Printer \$149 Epson 580 Printer \$179 Epson 680 Printer \$258 Epson Photo 720 Printer \$315 Epson 860 Printer \$328 Epson 880 Printer \$420 Epson 980 Printer \$680 Epson Photo 1290 A3+ \$935 Epson Stylus 1180 A3+ \$745 Epson Stylus 3000 A2 \$1,880
FAX Modem 56K Netcom Internal F/M \$49 56K Web Excel External F/M \$92 56K Netcom Roadster Serial \$185 56K Netcom Roadster USB \$185 56K PCMCIA Kingmax F/M \$130			Digital Camera Sony MDCF75 \$845 Sony MDCF85 \$1,355 Sony MDCF90 \$1,565 Sony MDCF95 \$1,745 Kodak DC-3200 1152x864 \$375 Kodak DC-3400 1901x1212 \$845 Kodak DC-3800 1792x1184 \$725 Kodak DC5000 1760x1168 \$1,050 Kodak E2-200 \$209

HARRIS TECHNOLOGY



A member of the Coles Myer Ltd. group

Computer Stop-Press

The Latest Source on the Newest Products

JULY 2001

Web
Direct

Each page has a
hot Weblink address
direct to "Stop-Press"
latest information
and pricing

MICROSOFT

MS OFFICE XP family
now available

Page 64

MAGELLAN

Magellan GPS Systems
for your navigational needs!

Page 15

CANON

Canon, S600 NEW Printer
up to 15 ppm black/ 10ppm
colour.

Page 44

HEWLETT PACKARD

HP DesignJets, LaserJet Printers,
Scanners and CDR Writers

Pages 46, 47, 48, 49

ADOBE

We use Adobe PageMaker,
Photoshop & Illustrator for the
production of this catalogue.

Pages 54 & 55

COMPAQ

Workgroup & Small
Business Server
ML330e

Page 9



(C0645) GST INC:

\$1,745

Web
Direct

www.ht.com.au/cat/compaq

RENT* \$19.12 per/week

Sales 1300 13 9999

Fax 1300 13 6666

Website

E-mail

www.ht.com.au

sales@ht.com.au

SAVE MONEY!
Compare our
prices

Index

PCs/Notebooks/Servers

Toshiba Notebooks	4-7
Compaq Computers	8-10
HP Servers/Networking	11
HP PC's	12
Compucon	13
SGL	14
Magellan	15
Sony	17
Quantum SnapServer	22

Rental

Rentsmart	21
-----------	----

Mice, Keyboards

Logitech	41
Microsoft Hardware	60

Back-up & Networking

APC	20
Netgear	26-27
Comsol Cables	28
Belkin	29
Dlink	30-31

Modems/Fax Machines

3Com	32
Swann Communications	33
Dynalink Modems	33

Storage

Optisor/SCSI	23
Maxtor	24
Digital Tape	25
Pioneer	34
Iomega	35
Verbatim	36-39
Eiger	40
HP CDRW	49

Add-on Cards

Matrox	40
New Magic	42
Pinnacle Systems	43

Monitors & Multimedia

Sony	16
Kodak	18
Samsung	19

Printers, Scanners

Canon	44
AGFA	45
HP DesignJets	46
HP LaserJets	47
HP OfficeJets & ScanJets	48
HP DeskJets	48
Fuji Xerox	50

Software Applications

Microsoft Windows	3
DTMS	49
Quicken	51
Macromedia	52
Autodesk	53
Adobe	54-55
Micrografx	56
FrontRange	57
PowerQuest	57
Dragon	58
GFI	59
Novell / CA	60
Computer Associates	61
Crystal Decisions	62
Symantec	63
Microsoft Office	64

Showroom and Store Locations

HQ - North Ryde

Open 7am - 7pm Monday - Friday
9am - 4pm Saturday & Sunday

45 Epping Road, Cnr Epping & Wicks Rd
North Ryde, NSW 2113 (Close to Microsoft)

Sales:
(02) 8879 5095

Showroom:
(02) 8879 5130

Reception:
(02) 8879 5000

Fax:
(02) 8879 4000



North Sydney

Open 9am - 5:30pm Monday - Friday
9am - 4pm Saturday & Sunday

Ground floor, Bayer Building, 275 Alfred St
Nth, Nth Sydney,
NSW 2060

Showroom:
(02) 8879 5135

Cust. Service:
(02) 8879 5140

Fax:
(02) 8823 9405



Melbourne

Open 9am - 5:30pm Monday - Friday
9am - 4pm Saturday & Sunday

212 Hoddle St
Abbotsford
VIC 3067

Sales:
(03) 9418 4100

Fax:
(03) 9418 4105



World Wide Web

www.ht.com.au

- ☒ Pricing
- ☒ Product Information
- ☒ Stock availability
- ☒ Your order status
- ☒ E-mail or fax for information
- ☒ Fast & Friendly Customer Service!



BROADWAY: Broadway Shopping Centre, Cnr Bay & Grose Streets NSW
2007 Ph: (02) 9219 7319

BURWOOD: Cnr Burwood Highway & Blackburn Rd, VIC 3151
Ph: (03) 9210 0732



BALLARAT EAST: Doveton St South, VIC 3350 Ph: (03) 5327 4050

CAMBERWELL: Station St, VIC 3124
Ph: (03) 9934 6600

Kmart and Target Shoppers! Not all products are in-store, but consulting & advice available on all items



Ordering

For all locations:
Phone, fax,
drop into one of our
locations or order
online through our
website.

Contact Details

Sales 1300 13 9999

Facsimile 1300 13 6666

Email info@ht.com.au

Customer Service 1300 13 8888

Main Reception 1300 13 5555

Delivery

We deliver Australia Wide!

Delivery times quoted by sales staff are our best estimates based on information received from the manufacturers. These estimates are offered as a guide only.

Under 3Kg: **\$10**
3Kg - 10Kg (e.g printer): **\$17**
Over 10Kg (e.g. system): **\$33**



COLES MYER SHAREHOLDERS:

receive 3% discount on most products, but specifically not on:
- Toshiba, IBM & Sony Notebooks & options -
Microsoft products bought under the ECEMP employee purchase program.

Fly Buys

You can collect **Fly Buys** points when you present your card for each purchase at Harris Technology. **Look out for bonus offers in this catalogue.** Collect 1 standard point for every \$5 spent.

Pricing

All items in this publication have been included in good faith on the basis that the goods, as described, will be available at the time of sale. A failure by supplier to deliver in accordance with sample, description or at all or other unintentional causes may result in some lines being unavailable. Display accessories shown in photographs throughout this publication are not included in the price. Whilst every care has been taken to ensure accuracy in this catalogue, we reserve the right to change incorrect prices resulting from a printing or typographical error. Every effort has been made to ensure that Harris Technology's suppliers maintain their prices, so that Harris Technology can supply products to you at the prices advertised in this catalogue. Prices quoted are correct at the time of publication and are subject to change without notice due to currency fluctuations affecting our suppliers. Harris Technology publishes price changes both immediately on its website www.ht.com.au and by public notices published on the first Tuesday of each month in The Australian.

Microsoft®

Check for latest prices & products!

Web
Direct

www.ht.com.au/cat/microsoft

Better Living in the Digital World

Windows® 2000 Professional

Microsoft Operating System for Business: The next generation of NT workstation for the desktop. Built on Windows NT® technology and an easy-to-use, familiar Windows® 98 user interface, Windows 2000 Professional makes business users more productive. Its integrated Web capabilities and broad support for mobile computers and hardware devices makes Windows 2000 the easy way for business users to connect to the Internet anywhere and anytime. And its rock-solid reliability and improved manageability simplify desktop management for IT Professionals.

- The best way to Internet-enable your business using integrated Web application services, increased scalability and industry-standard security.
- A more reliable platform designed for increased system uptime.
- A more manageable operating system to lower desktop management costs.
- Will enable knowledge workers to be more productive and take advantage of new devices.

Version Upgrade from Windows NT WorkStation (88594) GST INC: **\$286**

Product Upgrade from Windows 95/98 (88593) GST INC: **\$405**

Full Version (88592) GST INC: **\$579**



For Home

The Best in Digital Media
Improved User Experience
Enhanced Home Networking



For Business

Internet Enable your Business
Reliable, Manageable
Best for New Business Devices

Windows® Millenium Edition

The new Microsoft Operating System for home use

- **System Restores** lets you easily return your system to a working state in the event of a significant problem, so you can quickly get back to using your PC.
- With **Windows Image Acquisition**, you can easily import photos from scanners and cameras. No extra software is required to perform simple operations like previewing, rotating and printing.
- **Microsoft Movie Maker** gives you the power to create, edit and share movies over the Internet.
- **Windows Me** includes built-in safeguards that help prevent you (or applications) from deleting or overwriting key system files.
- **Internet Explorer 5.5** provides the richest online experience with easy search capabilities, faster browsing and easier printing.
- **Windows Me** is ready for home networking. You can easily set up a home network through your PC, and share printers, Internet connections and other devices.

Windows® Millenium Edition Upgrade
(A3687) GST INC: **\$168**



Windows® Millenium Edition Full Version
(A3686) GST INC: **\$329**



Microsoft
Office xp
See P64

500
BONUS POINTS
Collect
500 Bonus
Fly Buys
points
when you
purchase
A3686
between
20/06/01 -
31/07/01

Microsoft
Access
(C2079)
GST INC: **\$695**

Microsoft
EXCEL
(C2077)
GST INC: **\$695**

Microsoft
Outlook
(C2086)
GST INC: **\$227**

Microsoft
WORD
(C2075)
GST INC: **\$695**

Microsoft
Outlook
(C2086)
GST INC: **\$227**

Microsoft
WORD
(C2075)
GST INC: **\$695**

Microsoft
Outlook
(C2086)
GST INC: **\$227**

Microsoft
WORD
(C2075)
GST INC: **\$695**

JUL

3

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au



Order on-line
www.ht.com.au

TOSHIBA

See this Web Direct Link to see "LIVE" pricing or to order

Web
Direct

www.ht.com.au/cat/toshiba

The ultimate statement in mobile computing

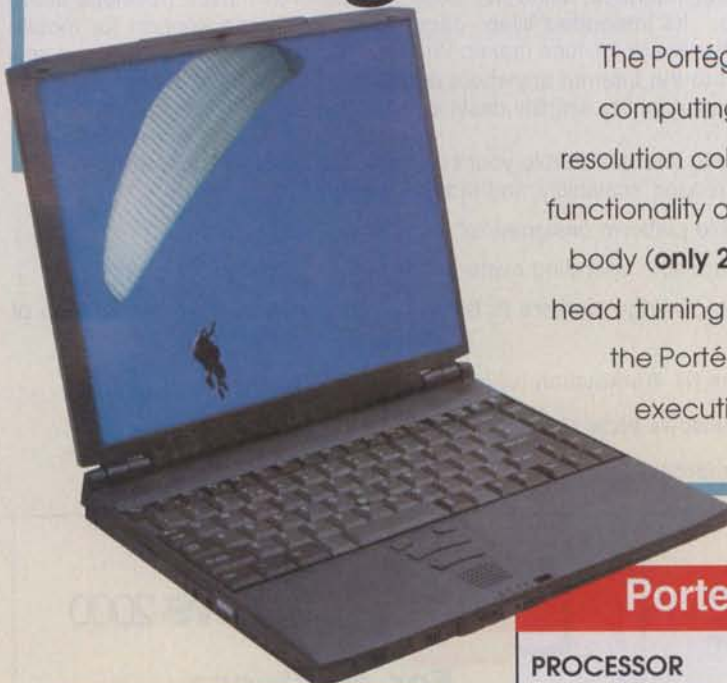
Portégé

*Ultrathin, ultralight,
ultraperformance*

Ask
About...



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site



The Portégé® is the ultimate statement in mobile computing with its Pentium® III power, large high resolution colour display, long battery life and easy functionality all packed into an ultra thin lightweight body (**only 2kg**) finished in sleek magnesium. With head turning style and work burning performance, the Portégé® is the perfect tool for the travelling executive ready to succeed in the new world.

**NO
FURTHER
DISCOUNTS
AVAILABLE
ON...**

ALL TOSHIBA
NOTEBOOKS
AND
ACCESSORIES
SOLD FROM
**HARRIS
TECHNOLOGY™**

Blue Tooth

*Wireless
Solution*



Toshiba's wireless solution empowers portable computer users to unplug from the restraints of conventional wired computing with a fully integrated Bluetooth PC Card, complete with SPANworks productivity software. Using short-range wireless radio communication Bluetooth facilitates fast and secure transmission of both voice and data at speeds of up to 1 Mbit/s (up to 20x faster than a standard). Toshiba's Bluetooth PC Card can be used to connect portable computers, printers, digital mobile phones, PDAs, digital cameras, network access points and other mobile devices to one another and connect to the Internet or a LAN with out the need for wires or cables.

Portege

7220CTe

3490CT

	7220CTe	3490CT
PROCESSOR	PIII 650MHz	PIII 700MHz
RAM STD/MAX	64/192 MB	128 MB
HARD DRIVE	12 GB	20GB
SCREEN	13.3" TFT	11.3" TFT
DISPLAY	1024x768	1024x768
CD-ROM	Optional	Optional
MIC & SPEAKER	Yes	Yes
PORT REPLICATOR	Optional	Yes
SELECT BAY	No	No
LAN	Optional	Yes
DVD CAPABLE	Yes	Yes - optional
WEIGHT	2 kg	2 kg
WARRANTY	3 Years	3 Years
OP System	Win 98SE	Win NT/2K
Rent*	\$45.70	\$46.11
GST Inc	\$4,890 (A2839)	\$5,059 (B8695)

(B6572) GST Inc **\$257**

JUL

4

**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL

TOSHIBA

See this Web Direct Link to see "LIVE" pricing or to order

Web
Direct

www.ht.com.au/cat/toshiba

Satellite Pro Power

Satellite Pro

*Exceptional
performance with
wireless connectivity!*

The Satellite Pro® series give you the best of both worlds — power and affordability. Built with just the right mix of features to let you power through day-to-day computing tasks with ease, colourful displays and powerful processors provide plenty of CPU horsepower to even the most demanding applications, while the integrated multimedia devices never leave functionality behind.



**NO
FURTHER
DISCOUNTS
AVAILABLE
ON...**

**ALL TOSHIBA
NOTEBOOKS
AND
ACCESSORIES
SOLD FROM
HARRIS
TECHNOLOGY.**

Satellite Pro	4600 - 750	4600-650	4600-700
PROCESSOR	Celeron 750	PIII 650Mhz	PIII 700MHz
RAM STD/MAX	64/320 MB	128/512 MB	128/512 MB
HARD DRIVE	15GB	10GB	20GB
SCREEN	14.1" TFT	14.1" TFT	14.1" TFT
CD-ROM/DVD	DVD	DVD	DVD
PORT REPLICATOR	Optional	Optional	Optional
VIDEO RAM	8MB	16MB	16MB
56K v9.0 & 10/100 LAN	Lan Antenna Only	Lan Antenna Only	Lan Antenna Only
WEIGHT	3.17 kg	3.17 kg	3.17 kg
WARRANTY	1 Year	1 Year	1 Year
OP System	Win NT4/2000	Win NT4/2000	Win NT4/2000
Rent*	\$36.87	\$40.92	\$45.55
GST Inc	\$3,945 (C4239)	\$4,379 (B6287)	\$4,998 (B6311)

RENTSMART

SEE PAGE

21

**FOR MORE
DETAILS**

The figures quoted are based on a per week basis over 3 years. T.A.P. Terms & Conditions apply.

JUL

5

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au

Fly Buys.

**Would you like
FlyBuys with that?**

TOSHIBA

See this Web Direct Link to see "LIVE" pricing or to order

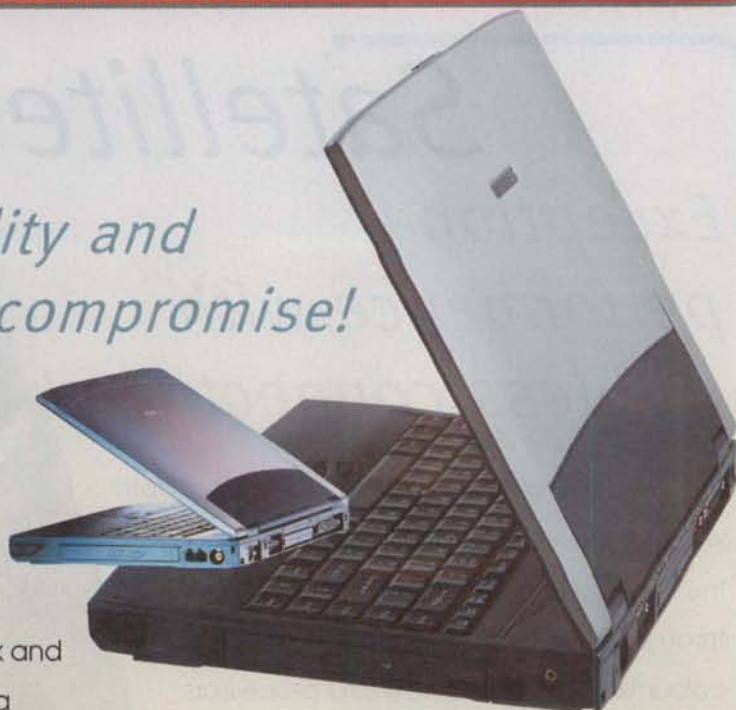
Web
Direct

www.ht.com.au/cat/toshiba

Compare Tecra Models

Tecra

The most mobility and power without compromise!



TOSHIBA Accessories

Toshiba
Tecra
Battery
Recharger
(90056)

\$514

Toshiba
leather Bag
for A4
notebooks
(68408)

\$229

Toshiba
USB 18-Key
Numeric
keypad
(A3773)

\$95

Toshiba
ACAdapter:
for Satellite,
Tecra or
Portege
(44200)

\$109

The Tecra® series is equipped for constant mobile performance — providing you with the ultimate combination of traditional Tecra investment benefits, high processor performance and a new sleek look and feel that you will notice. Each Tecra comes with DVD drive standard.

Tecra	8100 - 750	8200 - 850	8200 - 1G
PROCESSOR	PIII 750MHz	PIII 850MHz	PIII 1GHz
RAM	128 MB	128 MB	256 MB
HARD DRIVE	20 GB	20GB	20GB
SCREEN	14.1" TFT	14.1" TFT	14.1" TFT
CD-ROM/DVD	6 x DVD	8 x DVD	8 x DVD / CDRW
PORT REPLICATOR	Optional	Optional	Optional
VIDEO RAM	8MB	16MB	16MB
56K v9.0 & 10/100 LAN	Yes	Yes/Wireless	Yes/Wireless
WEIGHT	2.8 kg	2.8 kg	2.8 kg
WARRANTY	3 Years	3 Years	3 Years
OP System	Win 98	Win 98	Win 98
Rent*	\$58.96	\$65.76	\$82.80
GST Inc	\$6,469 (A2863)	\$7,579 (B8636)	\$9,698 (B8638)
OP System	Win NT	Win NT	Win NT
Rent*	\$57.77	\$67.63	\$84.44
GST Inc	\$6,659 (A2864)	\$7,795 (B8637)	\$9,890 (B8639)

JUL
6

HARRIS
TECHNOLOGY™

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL.

TOSHIBA

See this Web Direct Link to see "LIVE" pricing or to order

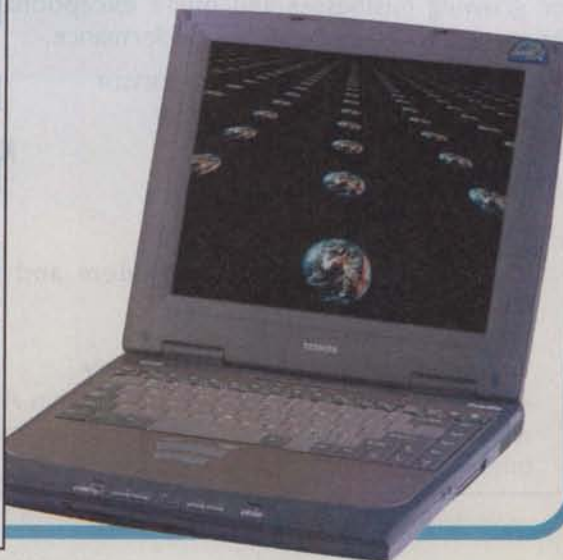
Web
Direct

www.ht.com.au/cat/toshiba

Presentation Delivery in style.

Satellite

Satellite	30CDT	1730XCDT
PROCESSOR	Cel 500MHz	Cel 650MHz
RAM STD/MAX	64/192 MB	64/320 MB
HARD DRIVE	10 GB	10GB
SCREEN	12.1" TFT	13.3" TFT
CD-ROM/DVD	CD	CD
PORT REPLICATOR	No	No
VIDEO RAM	8MB	8MB
56K v9.0 & 10/100 LAN	Yes/Wire	56K v9.0
WEIGHT	2 kg	3.17 kg
WARRANTY	1 Year	1 Year
OP System	Win Me	Win Me
Rent*	\$29.21	\$24.80
GST Inc	\$2,979 (B2350)	\$2,529 (B8623)



RENTSMART

SEE PAGE

21

FOR MORE
DETAILS

The figures quoted are based on a per week basis over 3 years. T.A.P. Terms & Conditions apply.

**NO
FURTHER
DISCOUNTS
AVAILABLE
ON...**

ALL TOSHIBA
NOTEBOOKS
AND
ACCESSORIES
SOLD FROM
**HARRIS
TECHNOLOGY.**



The Toshiba TLP-B2 Projector is an innovative and mobile communication solution, ultra portable and ideal for improving your presentation fields. Flexible input through a range of devices from DVD, VCR, television and notebook computers. Resolution: XGA 1,024x768, Brightness: 1,000 ANSI Lumens, Weight: 2.6 kg

Rent* \$73.74

TLP-B2

(A1506) GST Inc **\$8,499**



Projectors

With a full range of display options, the Toshiba portable projectors are flexible to ensure your presentation is delivered in style.

TLP-670 (without camera)

TLP-671 (with Camera)

Rent* \$97.07 (A0321) GST Inc **\$11,849** Rent* \$109.76 (A3458) GST Inc **\$13,399**

The Toshiba 670/671 Projectors are flexible enough to deliver your presentations in style! The 671 model comes with a unique swivel and folding camera allowing projection of hard copy material. Both projectors share the following features: **Resolution:** XGA 1,024x768, **Brightness:** 1,300 ANSI Lumens, **Weight:** 3.7 kg for 670 and 4.5 kg for the 671 (includes camera and swivel extension).

Ask
About...



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

JUL
7

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au



**Delivery
Australia-Wide**

Freedom to Think

Technology Partner
COMPAQ

**HARRIS
TECHNOLOGY**
for all your
computer
needs!



**HARRIS
TECHNOLOGY**
for all your
computer
needs!

ARMADA I10 NOTEBOOK

The NEW Armada I10 all-in-one notebook is designed for growing businesses and offers exceptional value-for-money, without sacrificing performance.

- Intel Pentium III 800MHz Processor
- 14.1" Colour TFT XGA Display
- 128MB SDRAM
- 10GB Hard Disk Drive
- 8X DVD-ROM
- 3.5" 1.44MB Diskette Drive
- Integrated Mini PCI 56K Modem and 10/100 Ethernet
- Microsoft Windows ME
- 1 Year Limited International Warranty
- Includes pick-up from anywhere within Australia, with a 48-hour service workshop turnaround repair time.



Product pictured is the 14.1" model.

RentSmart
\$36.40 / week

(C3498) GST INC: **\$3,895**

ARMADA E500 NOTEBOOK

Value, expandability and performance, the Armada E500 notebook provides the all-in-one solution that will meet your individual needs.

- Mobile Intel Pentium III 850MHz Processor
- 15.0" Colour TFT XGA display
- 128MB SDRAM
- 20GB Hard Disk Drive
- Removeable Diskette Drive
- 8X DVD-ROM
- Integrated Modem and 10/100 Ethernet
- Microsoft Windows 98 SE



Rent Smart
\$34.30 / week

(B8682) GST INC: **\$3,498**

ARMADA M700 NOTEBOOK

- Mobile Intel Pentium III 800MHz Processor
- 14.1" Colour TFT Display
- 128MB SDRAM
- 20GB Hard Disk Drive
- Integrated 56k/v.90 Modem and 10/100 NIC
- 8x DVD-ROM Drive
- Microsoft Windows 98 SE
- 3-year Limited International Warranty,
- Includes courier pick-up from anywhere in Australia and a 48-hour service workshop turnaround repair time.



RentSmart
\$56.68 / week

(B3809) GST INC: **\$6,219**

RENTSMART

SEE PAGE

21

FOR MORE
DETAILS

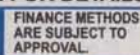
The figures quoted are based on a per week basis over 3 years. T.A.P. Terms & Conditions apply.

JUL

8

**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



Compaq Server Solutions with huge savings

THE WORLD'S MOST POPULAR SERVERS ARE
NOW AVAILABLE AT SMALL BUSINESS PRICES.

ProLiant ML 330e

The perfect first server for a business!

- Delivers easy-to-manage file, print & Internet sharing
- Intel Pentium III 800MHz processor with 133MHz front side bus
- 64MB ECC SD RAM (expandable to 2GB)
- 6 Available PCI Expansion Slots
- 20GB ATA/1000 Hard Drive
- Include: Famous Insight Manager Software and SmartStart software
- 3 Year Limited Compaq Warranty

(C0645) GST INC: **\$1,745**

RentSmart: \$17.45/wk

Small Business Budget Solution

PIII 800/20GB/128MB/
TR-5 BackUp Drive/
Windows 2000 Server

(C2925) GST INC:

\$4,495 RRP

(Save **\$796***)



RENTSMART

SEE PAGE

21

FOR MORE
DETAILS

The figures quoted
are based on a per
week basis over 3
years. T.A.P. Terms
& Conditions apply.

ProLiant ML 350

Offers the latest Technology with room to grow!

- Ensures high availability for your business with hot-plug options
- Dual capable Intel Pentium III 933MHz & 133MHz front side bus
- 128 MB ECC SDRAM (Expandable to 2 GB)
- 9.1GB Wide-Ultra SCSI Hard Drive (Expandable up to 218GB)
- 6 Available PCI Expansion Slots
- Includes: Famous Insight Manager Software and SmartStart software
- 3 Year On Site, Next Business Day Compaq Warranty

(A8055) GST INC: **\$4,200**

RentSmart: \$39.67/wk

Growing Business Value solution

PIII 933/9.1GB/128MB/
TR-5 BackUp Drive/
Windows 2000 Server

(C2928) GST INC:

\$5,995 RRP

(Save **\$1,525***)



ProLiant ML 370

World's most popular server!

- Constant uptime with hot-plug drives standard & power supply redundancy
- Dual capable Intel Pentium III 933MHz & 133MHz front side bus
- 28 MB ECC SDRAM (Expandable to 4 GB)
- Ultra2/Ultra3 dual-channel integrated SCSI controller (RAID upgradable)
- 6 Available PCI Expansion Slots
- Includes: Famous Insight Manager Software and SmartStart software
- 3 Year On Site, Next Business Day Compaq Warranty

(A6340) GST INC: **\$4,790**

RentSmart: \$33.00/wk

Scalable and performance solution

PIII 933/256MB/
3x18GB, RAID 5,
12/24GB DDS-3
DAT BackUp Drive/
Windows 2000 Server

(C3639) GST INC:

\$10,495 RRP

(Save **\$5,088***)



Microsoft
Small Business
Server 2000

Optional
Upgrade with
SBS & an
additional
128MB RAM
for **\$1495**
(save over
\$2000*)

For
Microsoft
SBS - Server
Details,
refer to
ht.com.au/
cat/microsoft

COMPAQ INSTALLATION & WARRANTY CAREPAQS UPGRADES :

Installation Carepaqs:

Installation of any above server
Bundles and MS Server 2000:
(C3719) GST INC: **\$195**
Installation of any above server
Bundles and MS SBS 2000:
(C3721) GST INC: **\$995**
Single Shared printer start up
Installation:
(C3726) GST INC: **\$195**

Warranty Upgrades Carepaqs:

3 Year, 4 Hour response,
8hrs x 5 days on site warranty
on ProLiant ML330 and
ML 350 Server:
(B2198) GST INC: **\$659**
3 Year, 4 Hour response,
8hrs x 5 days on site warranty
on ProLiant ML370 Server:
(99494) GST INC: **\$2,042**

Compaq Recover all Carepaqs

(Warranty for
complete peace of mind):

Covers ProLiant Servers
for protection from
Fires, Flood and theft:
Next day on site for year:
ProLiant ML350 (Warranty)
(C4283) GST INC **\$160**
ProLiant ML370 (Warranty)
(C3724) GST INC **\$500**

ProLiant Server Bundle Terms and Conditions:

-Windows 2000 SBS/
128MB memory pack
cannot be bought
separately.
-Carepaqs may only be
purchased at these
special pricing with
Bundles.

*Based on RRP.

The smart servers for business. Built-in pre-failure warranty on hard drives, processors, and memory mean the server detects any failing parts before your server goes down. Compaq will then immediately ship the parts required for your piece of mind.

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au

HARRIS
TECHNOLOGY @ Kmart

JUL

9

iPAQ Desktop, Pocket PC & Projectors

THE VERY LATEST COMPAQ iPAQ DESKTOP ISA FLEXIBLE AND INNOVATIVE BUSINESS TOOL.

New technology features are combined in its compact, sleek design; and it delivers new levels of product security. It is not only affordable to buy but also to run. Although sophisticated in its capabilities, the Compaq iPAQ has been created to deliver an unprecedented level of PC modularity.

(B8286) GST Inc:

- Intel Celeron 700MHz Processor
- 64MB 133MHz SDRAM
- Integrated Intel 3D Graphics
- 10GB Ultra ATA 100 Hard Drive
- Integrated AC97 audio
- Integrated Intel Network Card
- Compaq Carbon Scroll Mouse
- Compaq Carbon Easy Access Keyboard
- Microsoft Windows Me

Going down in Price!

RentSmart
\$Call / week

\$Call

OTHER
CONFIGURATIONS
ALSO
AVAILABLE



Technology Partner
COMPAQ

**HARRIS
TECHNOLOGY™**
for all your
computer
needs!

**COMPAQ
iPAQ
STOWAWAY
PORTABLE**



(C0247) GST Inc:

\$255

RentSmart:
\$12.00 / week

Introducing the new Compaq iPAQ Stowaway Portable Keyboard, which will allow people to quickly and comfortably enter text into Compaq iPAQ pocket PCs, without having to carry around a full-size keyboard.

WORK WHERE YOU CHOOSE TO WITH A COMPAQ iPAQ POCKET PC



**COMPAQ
iPAQ POCKET
PC H3630 COLOUR UNIT**

(A3737) GST Inc: **\$1,099**

RentSmart: \$12.00 / week

- Fastest PDA on the market – 206Mhz Intel StrongARM processor
- More memory – 32MB of storage for your files including MP3's, addresses, e-mails and attachments
- Most expandable – with the expansion jacket system you can add CompactFlash or PC card accessories and Wireless LAN, GPS Navigation Pack, Bluetooth Communication Packs and Cellular Technologies (GSM).
- Easy to view – only PDA with reflective technology for best screen resolution outdoors.
- Easy to use – natural handwriting recognition, record voice notes, familiar Windows interface.
- Productivity Software – Pocket Word, Pocket Excel, Pocket Internet Explorer
- Desktop Software – ActiveSync 3.1, Microsoft Outlook® 2000, Internet Explorer 5.0

Also available:

Compaq

iPAQ H3660 – 64MB
Colour Unit

(C2139) GST Inc:

\$1,439

Compaq

iPAQ H3130 – 16MB
Mono Unit

(B4505) GST Inc:

\$774

COMPAQ'S MICROPORTABLE PROJECTORS

COMPAQ MP1400

- 800 x 600 SVGA native display resolution and auto scales up to SXGA and Macintosh resolutions
- Increased light output of 700 ANSI lumens
- On-screen menu or adjusting tint, brightness, colour and many more image settings
- Operating noise less than 40 decibels
- Optional remote control/multimedia adapter with 8W Premier Sound speaker and video plug of VCR, DVD and camcorder inputs
- Only 1.9kgs
- 2 year warranty

RentSmart \$53.26 / week

(A5430)

GST Inc **\$5,843**



COMPAQ MP2800 – NEW!

- 1024 x 768 XGA display resolution
- Increased light output of 1000 ANSI lumens
- On-screen menu or adjusting tint, brightness, colour, keystone and many more image settings.
- Remote control/multimedia adapter with 8W
- Premier Sound speaker and video plug or VCR, DVD and camcorder inputs, USB port, DVI connector
- Operating noise levels less than 40 decibels
- Integrated zoom lens
- One of the world's smallest projectors weighing only 1.36kgs
- 2 year warranty

RentSmart \$78.38 / week

(B8669)

GST Inc **\$9,179**



Wine
on-line?

VINTAGE
CELLARS
vintagecellars.
com.au

JUL
10

**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL



**Fast Delivery
Australia-Wide**

**Web
Direct**

www.ht.com.au/cat/hp

HP Networks & Servers

NEXT BUSINESS DAY ADVANCE REPLACEMENT - LIFETIME WARRANTY
PLEASE NOTE THAT PRICES ARE SUBJECT TO CHANGE ON ALL PRODUCTS

HP ProCurve Switch 2512 & 2524

9.6GBPS BACKPLANE & AUTO-MDIX • Lowest Price 10/100 Managed Switch • Provides a rich, layer 2 feature set • Includes 2 built-in gigabit transceiver slots • Auto MDIX on all 10/100 and 100/1000 ports • Lifetime warranty for as long as you own the product • Wire-speed performance on all ports • FREE HP TopTools Management Software included

2512 (12 port managed switch)

(A9703) GST Inc: **\$1,619**

2524 (24 port managed switch)

(B0062) GST Inc: **\$2,059**

HP ProCurve Switch 2312 & 2324

NEW PRODUCT
Ideal for low-cost, unmanaged 10/100 connectivity • Lowest Price 10/100 Switch • Includes 2 Built-in Gigabit transceiver slots • Brings 10/100/1000 solutions to the market • Media-flexible ports for uplinks and server connections • HP quality, functionality and performance • Plug and play solution

2312 (12 port unmanaged switch)

(B0063) GST Inc: **\$976**

2324 (24 port unmanaged switch)

(B0064) GST Inc: **\$1,394**

HP ProCurve Switch Modules

HP ProCurve Switch Gigabit Stacking Kit
(78306) GST INC:

\$422

HP ProCurve Gigabit-SX Transceiver
(82140) GST INC:

\$1,279

HP ProCurve Gigabit-LX Transceiver
(82141) GST INC:

\$2,033

HP ProCurve 100/1000-T Transceiver
(A9127) GST INC:

\$889

HP ProCurve 100-FX SC Transceiver
(A9128) GST INC:

\$710

HP ProCurve Switch 4000m

HP's 40 port managed 10/100/Gigabit switch provides a scalable low cost switching solution for organisations looking for scalable, expandable, low-cost migration to 10/100/Gigabit. • High speed/media-flexible uplinks including 10/100Base-T, Gigabit-SX, LX, and 1000Base-T. • Switch meshing = high availability with high performance • Stacking capability with single IP address management.

HP NETSERVER E-200

The Server with the best price/performance value for small businesses.

Starts your small business off on the right Track. The HP NetServer E200 offers the best value-to-performance ratio of any major server supplier.

A desktop PC may do the job when you are starting out, but as your small business expands, it quickly out grows the ability to cut corners on something as fundamental as a server. And with the HP NetServer E200 HP leads the top tier server suppliers offering full server grade technology, functionality and performance for the price of a PC.

- Intel PIII866 MHz processor with 133MHz front size bus
- 64MB registered ECC RAM standard (expandable to 768)
- 9.1GB, 7200rpm, 68-pin Ultra Wide SCSI HDD
- Four PCI, one ISA
- Integrated HP NetServer 10/100TX LAN adapter

(C1446) GST INC: **\$2,499**

Rent 3 yrs - \$24.50 per week* Call for long term *rental pricing

HP ProCurve Switch 408

Unmanaged 8 port 10/100 switch in a compact sized package. This switch offers half/full duplex, 10/100 autosensing on every port.

Warranty: Lifetime, Exchange Next Day (79125) GST INC: **\$349**



HARRIS TECHNOLOGY
for all your computer needs!

All systems include: 7 mass storage shelves (4 available after floppy, CD-ROM & 9GB disc), 5 expansion slots (4 PCI, 1 ISA combination), integrated 10/100 network interface, and easy set up CD.

JUL 11

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

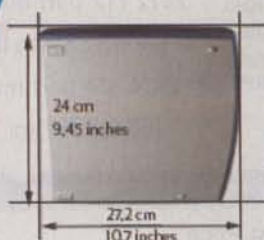
Web: www.ht.com.au
Email: sales@ht.com.au

HARRIS TECHNOLOGY @ **Target.**

HP Desktops

HP e-pc

**HOT
NEW PRODUCT**



Storage

Removable, generously proportioned hard disk drive for all user needs.



Connectivity

Lockable USB, serial, parallel, PS/2 and LAN ports to fit your computing environment.

Ultra-small, ultra-smart

The revolutionary e-Vectra measures only 9.5 inches (24 cm) high.



Media Choice

Fast, slim CD and media-free models.



Power

Powerful Intel Pentium III and Celeron processor configurations and generous RAM to suit any business application.



e-Diagnostics

The intelligent eDiagTools technology allows instant problem identification and web-enabled notification to HP or your support staff.

Operating Systems

Choose from a range of Microsoft operating systems including Windows 2000 to match your corporate standard.

Microsoft

e-DiagTools



Processor:	hp e-pc C700	hp e-pc C700	hp e-pc PIII 866	hp e-pc PIII 866
SDRAM	64MB	128MB	128MB	128MB
Hard Disk	20G	20G	20G	20G
FDD	optional	optional	optional	optional
Monitor	no	no	no	no
CD - ROM	no	24x	24x	24x
OS	Windows '98	Windows '98	Windows 2000	Windows '98
Modem	Yes	Yes	Yes	Yes
Software	Word 2000	Word 2000	Word 2000	Word 2000
Part No.:	(B8730)	(B8731)	(B8732)	(B8733)
GST INC:	\$1,328	\$1,499	\$2,058	\$1,874
Rental:	\$11.19	\$16.66	\$22.56	\$20.81

PLEASE NOTE THAT PRICING IS SUBJECT TO CHANGE - CHECK OUR WEB DIRECT LINK FOR THE LATEST PRICES, INFORMATION & AVAILABILITY



Accredited
Workgroup Reseller

HEWLETT
PACKARD

RENTSMART

SEE PAGE

21

FOR MORE
DETAILS

The figures quoted
are based on a per
week basis over 3
years. T.A.P. Terms
& Conditions apply.

HARRIS
TECHNOLOGY



Broadway (Sydney)
Burwood (Melbourne)

**Kmart
Shoppers!**

Not all
products are
in-store, but
consulting &
advice
available on
all items

JUL

12

**HARRIS
TECHNOLOGY**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL

Enjoy a world of difference with Compucon

Celestion G800 System

- AMD Duron 800Mhz Processor with 192K cache
- Socket A, VIA KT133 Chipset ATX MotherBoard 200Mhz internal system bus
- 128MB PC133 SDRAM
- 20GB Ultra ATA 100 5400rpm Hard Drive
- GMCH Video Chip Integrated, 2D/3D Graphics
- Compucon Celestion Grey mATX Tower Case
- 1.44MB Floppy Drive
- Compucon Multifunction Internet PS/2 Keyboard
- Compucon PS2 Scroll Mouse
- Internal 32/8X/4X IDE CD-RW drive with Software
- Integrated Sound Blaster/ Direct Sound AC97 Audio
- 2 x Serial, 1 x Parallel, PS/2 keyboard and mouse, 2 x USB Ports
- 56K Internal Voice PCI v.90 Modem
- 3 Years On-Site Warranty (4-8 Hrs Response Time)
- (3 PCI Slots, 1 AMR Slot, 2 DIMMs, 2USB)
- Windows Millennium Edition



Monitor Not Included in Price
Includes Office XP

RentSmart: \$20.27
per wk - 3 yrs

Celestion B933 System

- Intel Pentium III 933Mhz Coppermine Cpu with 256K Cache
- Socket FC-PGA mATX Motherboard, ULTRA ATA 100 VIA 694X,
- 133Mhz FSB
- 128MB PC133 SDRAM
- 20.4GB Ultra ATA 100 7200rpm Hard Drive
- 32MB Riva TNT2 M64 AGP Graphics Card
- Compucon Celestion Blue mATX Tower Case
- 1.44MB Floppy Drive
- 12xDVD/40x CD Speed IDE DVD-Rom drive
- Compucon Multifunction Internet PS/2 Keyboard
- Compucon PS2 Scroll Mouse
- Integrated Sound Blaster/ Direct Sound AC97 Audio
- 2 x Serial, Parallel, PS/2 keyboard and mouse, 2 x USB Ports
- 56K Internal Voice PCI v.90 Modem
- 3 Years On-Site Warranty
- (3PCI, 1 AMR and 1 AGP 4X slots, 2 DIMMs, 2USB)



Monitor Not Included in Price

RentSmart: \$21.85
per wk - 3 yrs

COMPUCON (C4296) GST Inc **\$1,398**

COMPUCON (C2809) GST Inc **\$1,994**

Atlantis Gaming Machine

- AMD AthlonThunderbird Socket A 1.1Ghz 200Mhz FSB CPU
- MSI-6340 FC-PGA VIA Chipset mATX MotherBoard 133Mhz FSB
- 256MB PC133 SDRAM 168Pin
- 20.4GB IDE Ultra ATA 100, 7200rpm Hdd
- Leadtek GeForce-2 MX 256 32Mb Video Card 2X/4X AGP
- Compucon Atlantis iGrey ATX Case
- 1.44MB Floppy Drive
- 32/8X/4X IDE CD-RW drive with Software
- Compucon PS2 Multifunction Internet Keyboard
- Compucon PS/2 Scroll Button Mouse
- Creative SoundBlaster Live Value Sound Card
- Netcomm 56K Fax/Modem Internal



GamesSoftware
Age Of Empires II
(The Age of Kings)
Midtown Madness 2,
Microsoft Golf
2001 Edition
Microsoft Windows
Millennium Edition CD



Monitor Not Included in Price

RentSmart: \$23.32
per wk - 3 yrs

Celestion N733 Value System

- Intel Celeron 733Mhz Processor with 128K cache
- Intel 810 Chipset 100Mhz mATX Motherboard
- 64MB PC133 SDRAM
- 10GB Ultra ATA 100 5400rpm Hard Drive
- GMCH Video Chip Integrated, 2D/3D Graphics
- Compucon Celestion Grey mATX Tower Case
- 1.44MB Floppy Drive
- 52 Speed IDE Cd-Rom Drive
- Compucon Multifunction Internet PS/2 Keyboard
- Compucon PS2 Scroll Mouse
- Integrated Sound Blaster/ Direct Sound AC97 Audio
- 2 x Serial, 1 x Parallel, PS/2 keyboard and mouse, 2 x USB Ports
- 56K Internal Voice PCI v.90 Modem



Monitor Not Included in Price

RentSmart: \$13.32
per wk - 3 yrs

COMPUCON (C0223) GST Inc **\$2,378**

COMPUCON (C2521) GST Inc **\$1,216**

15.1"
LCD Flat
Screen
Monitor



(A8436)

GST Inc

\$1,398

*Ask
About...*



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site



sgi



Harris Technology
for all your
computer needs!

**Web
Direct**

www.ht.com.au/cat/sgi

SGI - Silicon Graphic Power

Visual graphics workstations



Now you can
collect
Fly Buys points
when you
purchase from
**HARRIS
TECHNOLOGY**

RENTSMART

SEE PAGE

21

**FOR MORE
DETAILS**

The figures quoted
are based on a per
week basis over 3
years. T.A.P. Terms
& Conditions apply.

sgi zx10 Series

The Silicon Graphics Zx10 visual workstation is a desktop workstation featuring Wahoo Technology, which delivers unparalleled system throughput and I/O bandwidth in an industry-standard architecture.

Built to specification the Zx10 Graphic Workstations start from a 933MHz PIII processor, 256MB PC133 SDRAM, 18.2GB 10k U160m SCSI, G450 Gfx 32MB.

Systems and Servers are built to specification,
Please call one of our SGI Sales
Representatives for a tailored quotation.

\$Call



*Ask
About...*



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site



sgi1450 Server

Intel Pentium III Processor
Memory Capacity 4GB
SDRAM, ECC protected
Pre Installed 1.44Mb FDD
32x CD-ROM Drive.
Integrated 10/100TX LAN
(Rack not included)

(C0626)



sgi1200 Server

Space saving rack mount 2 IU chassis, Scales to two Intel Pentium III processors and 2GB of SDRAM, Designed for remote manageability, ECC protected, Pre Installed 1.44Mb FDD and 32x CD ROM Drive.

(96824)



sgi1100 Server

Designed for remote manageability this space-saving rack mount chassis offers minimum footprint with maximum performance. Scales to Intel Pentium III processors and 2GB of SDRAM has cluster capability.

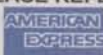
(C0497)

CALL OR CHECK OUR WEB-LINK FOR **HOT** PRICING!

**JUL
14**

**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL

Magellan GPS Systems

Australian DataSend

DataSend is a PC application that provides a large data base of worldwide cities and Navaid's to add to your GPS 315 or GPS 320.



- More than 134000 uploadable POI's including caravan parks, golf courses and more!
- Customize your GPS receiver to show the destinations and geographic areas most important to your travels or adventures.
- Upload up to 18500 POI's at a time for a selected region. Designed for Windows 95, 98 or NT 4.0 or higher software.
- European and American versions of DataSend Available

(B7528) GST Inc: **\$137**

Magellan GPS 315



(B7506) GST Inc:

\$495

The GPS 315 is built to get you there and back, wherever you're going. Chart your bearing, heading, distance, speed and more with the help of nine easy-to-follow navigation screens. With the GPS 315, you can navigate to nearly 12,000 worldwide cities and record as many as 500 favorite locations for future return trips.

Features:

- Powerful 12 parallel-channel receiver Built in database of worldwide cities.
- 12hrs of continuous battery life on two AA alkaline batteries
- 1200 point SmartTrack records your path; BackTrack brings you home again.
- Store 500 waypoints.
- NMEA data output and DGPS ready.
- Weatherproof, compact and lightweight.

Optional Accessories for GPS 310, 315 and 320



• Power data cable adaptor
(B7519)
GST Inc: **\$109**



• Power cable
(B7509) GST Inc: **\$55**

Magellan GPS Map Companion

* refer to side bar for detail of GPS Map Companion clip image



*Palm V series not included

(B7496) GST Inc:

\$723

Turn your Palm V or Vx handheld into a powerful navigation tool that can pinpoint your location to within 10m on Australian street maps. Just clip the GPS Companion onto your Palm V series handheld and the receiver pinpoints your location.

Features:

- Powerful 12 parallel channel receiver with powerful tracking in most environments.
- Up to 10 hours on 2 AAA alkaline batteries.
- Compatible with most Palm software that access GPS
- Displays AMG/MGA position, Lat/Long, Elevation, Trip, Speed, Heading, Bearing, Odometer, Waypoints, Routes, GPS battery life and more!
- Weighs only 110gms.

Magellan GPS Map Companion



(B7496)



HARRIS TECHNOLOGY.
for all your computer needs!

Magellan GPS 320



(B7508) GST Inc:

\$599

The GPS 320 personal navigator will take you where you want to go. Its built-in database puts more than 15,000 cities and nautical navigation aids in the palm of your hand. Nine navigation screen's provide all the information you need on a high resolution, EL backlit display.

Features:

Specifications as per Magellan GPS 315, plus:

- Built in Database of world wide cities and navaid's.
- Ships with PC/Power data cable.

Wine on-line?

VINTAGE CELLARS
vintagecellars.com.au

• Vehicle Mounting Bracket (B7515) GST Inc: **\$105**

• *Aquapac, clear plastic weatherproof case to hold both Palm with Companion Clip-On.
*Magellan GPS Map Companion ONLY (C4290) GST Inc: **From \$72**



Sony - The leaders in visual display

MONITORS

CPDE220 (17")

16" viewable image, 1280 x 1024 @ 75 Hz, Max Refresh Rate: 85Hz @ 1024 x 768, Complete On-screen Menus, Anti Reflective Screen Coating, Windows® 95/98, Windows® NT.



(B1831) GST INC **\$719**

NEW

CPDG420 (19")

18" viewable image, 1880 x 1440 @ 70 Hz Max Refresh Rate: 85Hz @ 1600 x 1200, Complete On-screen Menus, Anti Reflective Screen Coating, Windows® 95/98, Windows® NT.



(B7964) GST INC **\$1,259**

NEW

CPDG520 (21")

19.8" viewable image, 2048 x 1536 @ 75 Hz Max Refresh Rate: 85Hz @ 1800 x 1350, Complete On-screen Menus, Anti Reflective Screen Coating, Windows® 95/98 and Windows® NT.



(B7966) GST INC **\$2,099**

SDMN50 (15")

15" XGA TFT Active Matrix LCD Panel, Black Matte Finish, Bright Picture, Sharp Images - 300:1 Contrast Ratio 200 cd/m2 Luminance / 0.297mm Dot Pitch, 1024 x 768 @ 75Hz, Wide Viewing Angle 140°, Stereo Speakers in Base, On-screen Digital Controls, Windows® 95/98 and Windows® NT.



(97422) GST INC **\$2,549**

SDMM51 (15.1")

15.1" XGA TFT Active Matrix LCD Panel. Sleek, Lightweight and Flexible Design with Zero Footprint New Improved Picture Quality, Fine .30mm Pixel pitch, Built-in stereo spkrs and head-Phone jack, Lt Grey/Dk Grey, Arm Mountable And Anti-theft lockable



(B0916) GST INC **\$2,125**

NEW

SDMM81 (18.1")

18.1" XGA TFT Active Matrix LCD Panel. Sleek, lightweight and flexible Design with Zero Footprint, new improved picture quality, fine .30mm pixel pitch, Built-in stereo speakers and headphone jack, Lt Grey/Dk Grey, Arm mountable and Anti-theft lockable.



(B8689) GST INC **\$4,389**

CAMERAS

Cyber-shot DSC-P30

NEW

Memory Stick Digital Camera 1.3 Megapixel

Memory Stick, InfoLithium compatible (NPFS11) 3 x Zoom (6x Precision Digital), Optical Viewfinder, 1.5" LCD, Email, TIFF, MPEG EX, Clipmotion, AF Illuminator, Video out, USB, 1280x960 resolution, MGI Photosuite (Windows/Mac) VideoWave (Windows) 1yr warranty



(C2363) GST INC **\$799**

Cyber-shot DSC-P50

NEW

Memory Stick Digital Camera 2.1 Megapixel

2.1 Mega Pixel, Optical viewfinder, MPEG Movie EX, Clipmotion, 6x Precision Zoom, e-mail mode, text mode, TIFF mode, Inbuilt flash, 4MB Memory Stick.



MEMORY STICK

(C4274) GST INC **\$949**



Cyber-shot DSC-505V

Memory Stick Digital Camera 3.3 Megapixel

InfoLithium S (NPFS11), 5x Zoom (10x Precision Digital), 2" LCD, MPEG Movie HQ, Voice, Memo, Email, Audio/Video out, USB, External, flash socket, 2240x1680 (3.3 Megapixel) Resolution, MGI PhotoSuite (Windows/Mac), MGI VideoWave (Windows), 1yr warranty



(A7100) GST INC **\$1,845**

Mavica FD75

NEW

Floppy Disk Digital Still Camera .35 Megapixel

3.5" 2HD Floppy, InfoLithium L (NPF330/NPF550), zoom, 2.5" LCD, 640 x 480 (0.35 Megapixel) Silver in colour.



(B8349) GST INC **\$899**

Mavica CD300

NEW

CD-R/CD-RW Mavica Digital Still Camera

3.3 Mega Pixels, 3x Optical Zoom (6x Digital), Carl Zeiss Lens 3 Burst mode, Automatic Pop-Up Flash, USB Connectivity



(C4276) GST INC **\$2,289**

MEMORY STICK

Sony Memory Stick 8MB (88647) **\$79**

Sony Memory Stick 16MB (86779) **\$112**

Sony Memory Stick 32MB (88654) **\$179**

Sony Memory Stick 64MB (88648) **\$299**



SONY®

Check for latest prices & products!

Web
Direct

www.ht.com.au/cat/sony

Taking off in style. Landing with power.

The new VAIO R Series SuperSlim Pro™ notebook

Memory Stick Slot

Magnesium Alloy case

Built-in modem & network connector

12.1" XGA (1024x768) display

2 USB Ports & I-link port

Pentium III 850 Mhz

20 GB HDD - 128 MB RAM

Windows Me

SONY VAIO



(B1238)
GST INC

\$189

**Memory Stick
Mouse**

USB mouse with
built-in memory
stick reader/
writer, Optical
sensor, Left/ Right
and scroll button



(C2156) GST INC
\$5,899

Docking Station Included

Sony Vaio - PCGFX770K Mobile
Pentium III 650 MHz, 128Mb SDRAM,
20Gb HDD, FDD, 8x/20x DVD-ROM, 11
Mb Video RAM (Shared) 14.1" XGA
Colour TFT display, Microsoft Windows
2000 Professional

(C3536) GST INC

\$3,799

Now
with **128MB
RAM**



**Fast
Delivery
Australia-
Wide**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au

Fly Buys.

**Would you like
FlyBuys with that?**

JUL
17

Share Moments. Share Life™

KODAK ACCESSORIES

Premium Camera Bag
(82273) GST Inc:

\$49

80 Minute
(B3071) GST Inc:

\$3

Gold/Silver 10 Pack
(B0912) GST Inc:

\$19

EXTRA 32MB PIC CARD FREE with the DC4800 Camera while stocks last or until further notice.

EXTRA 16MB PIC CARD FREE with the DC3800 Camera while stocks last or until further notice.

KODAK PICTURE CARDS

32MB Picture Card
(62677) GST Inc:

\$142

64MB Picture Card
(82249) GST Inc:

\$236

96MB Picture Card
(88332) GST Inc:

\$350

Kodak MC3 portable media device

All the multimedia you've ever wanted in one little player. Click into digital video mode to shoot funny movies or snap a few digital pictures. Download your favorite MP3s and take them with you, listening via ear buds or through your boom box or car stereo. It's one of the only MP3 players with a reflective color preview screen, so you can use it even in bright sunlight. Transferring to your PC is a breeze. Then you can share your memories over the Internet or print them out. It even lets you combine your pictures, music and video into unique video clips or music videos.



(B9818) GST Inc: **\$395**

Kodak DX3500

NEW!

Get shooting right away with 8MB of internal memory. The DX3500 also has a COMPACTFLASH memory expansion slot and 3X digital zoom. 2.2MP resolution provides photo-realistic prints up to 8"x10". The KODAK Camera Dock lets you send pictures from your camera to your computer with just the touch of a button & is currently shipping with the DX3500 while stocks last. KODAK Picture Software lets you instantly view, edit, e-mail, and print your pictures.



KODAK DX3500 (C2151) GST Inc: **\$689**

Kodak DC4800

For passionate digital photographers or those needing the highest possible quality or the widest creative control. Compact size. 3.3 megapixels - super crisp resolution allowing prints up to 11"x17". Six image qualities, from e-mail to uncompressed Tif. Variable ISO settings (100, 200, 400). Wide angle 3x optical zoom plus 2x digital zoom. Lithium Ion rechargeable battery (rechargeable in camera). Manual & auto settings. Variable colour balance. TTL AF. Special effects. Lens threaded for additional external lenses. Burst capture mode.* (A3295) GST Inc:



\$1,175

Kodak DC5000

Rugged, durable, and easy-to-use, the KODAK DC5000 will help you get the job done. The DC5000's weatherproof body will hold up under the toughest circumstances. Two-megapixel resolution provides you with excellent picture quality even on 8" x 10" prints. The 2X optical (30 - 60 mm) and 3X digital zoom let you choose wide angle or telephoto to take pictures in a variety of open spaces. All in all, a practical, intuitive package that is as easy to use as a point & shoot, but tough on the job



(A3540) GST Inc: **\$998**

Kodak DC3800

The KODAK DC3800 Digital Camera is the sleek, high-performance, easy-to-use digital camera. Its small size makes it pocket-perfect. The 2.1MP resolution delivers detailed, vibrant pictures on screen and paper. And the 2X digital zoom lets you focus on what's important. The USB COMPACTFLASH Card Reader makes it easy to upload your pictures and its point-and-shoot design makes it user-friendly.



(B1252) GST Inc: **\$697**

Kodak DC3400

• Two-megapixel resolution means exceptional detail and brilliance - up to 8" x 10" prints. • Its 2X optical zoom delivers crisper close-ups, and its 3X digital zoom lets you get even closer. • User-friendly controls make the DC3400 quick to learn & easy to use. • Zoom Digital Camera, ensuring high quality & no-nonsense performance. • Get connected quickly & easily with its USB and serial cables - it's easy to download, organize, and e-mail your pictures. • Print your pictures with convenience from your own printer.



(A5579) GST Inc: **\$768**

Kodak PM200 printer

The most distinctive feature on the Personal Picture Maker 200 is its 1.8-inch, full-colour, LCD preview screen just like those on digital cameras. You don't even need to be connected to a PC, you just insert a memory card from a digital camera (the PPM200 accepts both Smart Media and Compact Flash formats) to print. The preview screen allows you to scroll through all the images on the card, select those to print, choose the number of copies, and in what size and layout. Compatible with Microsoft Windows 98 and Millennium Edition, it connects easily via a USB port.



(B3084) GST Inc: **\$549**

Kodak DC3200

Capture fun and spontaneity with the DC3200. One megapixel resolution means eye-catching e-mails and prints up to 5" x 7". Its 2X digital zoom delivers great detail. Two megabyte internal memory and COMPACTFLASH Card capability keeps you shooting longer. And its LCD screen lets you preview your pictures with ease.



(B1255) GST Inc: **\$374**

JUL

18

High-breed Monitors

SyncMaster 240t TFT

24" Multi function LCD Monitor



SEE IT IN OUR
SHOW ROOMS!!

- 24" TFT monitor speaker included, silver colour
- Industry's 1st 24" Viewable HDTV ready
- WUXGA LCD 1920 x 1200 Active Native Resolution
- Extra Wide 170 Degree Viewing Angle
- Analog / Digital / S-Video Input
- Picture in Picture, Picture-by-Picture
- Digital Zoom to 64 times
- Advanced Image Scaling
- Switchable Aspect Ratio (16:10, 5:4 or 4:3)
- Easy Access One Button Auto Adjustment
- Remote control (OSD and Input Selection)
- Supports Windows, Macintosh & Sun Microsystems

(C1274) GST Inc **from \$14,065**

SyncMaster 150MP

15" Multi function LCD Monitor

- 15" Multi Function LCD Monitor
- 1024 x 768 max resolution @ 85Hz NTSC, S-Video, TV Tuner Built-In RCA Video & Audio, S-Video, Antenna Connector
- Picture In Picture Capability
- Full 15" viewable screen
- Built-in Multimedia Speakers
- Most advanced image scaling
- Fast and accurate auto adjustment
- 60/60/70/70 Viewing Angle
- Little electromagnetic radiation
- Absolutely no flicker
- Metallic Silver Color
- NUTEK & TCO '95 certified
- Weight Less Than 10 Lbs

COMES
WITH TV
TUNER!!!



(C1282) GST Inc **\$2,558**



**HARRIS
TECHNOLOGY.**
for all your
computer
needs!

SyncMaster 570s TFT

(15 - inch Monitor)

- Full 15" viewable screen
- Most advanced image scaling
- Fast and accurate auto adjustment
- Little electromagnetic radiation
- Absolutely no flicker
- Silver Grey color
- MPR-II & TCO '99 certified
- Optional USB Hub connectivity
- Color Solution (Colorific s/w)
- Pivot Technology (Pivot s/w)
- Multimedia - optional



ONLY AT THIS PRICE
WHILE STOCKS LAST!!

(C1695) GST Inc **\$1,850**

SyncMaster 170MP

17" Multi function LCD Monitor

- 17" Multi Function LCD Monitor
- 1280 x 1024 max resolution @ 76Hz
- NTSC, S-Video, TV Tuner Built-In RCA Video & Audio, S-Video, Antenna Connector
- Picture In Picture Capability
- Full 17" viewable screen
- Built-in Multimedia Speakers
- Most advanced image scaling
- Fast and accurate auto adjustment
- 80/80/80/80 Viewing Angle
- Little electromagnetic radiation
- Absolutely no flicker
- Metallic Silver Color
- NUTEK & TCO '95 certified
- Weight Less Than 15 Lbs

COMES
WITH TV
TUNER!!!



(B6517) GST Inc **\$4,235**

Fly Buys.

Collect Fly Buys
points on your
computer
hardware
& software
when you
purchase from
**HARRIS
TECHNOLOGY.**

SyncMaster 753df

17-inch monitor

- 17"(16" Viewable)
- 0.20mm dot pitch (horizontal)
- 1280 x 1024 @ 66Hz Maximum Resolution
- DynaFlat - Infinitely Flat Tube
- Smart III surface treatment (anti-static & anti-glare)
- On Screen Digital Display
- Plug & Play Compatibility
- MPR-II/NUTEK certified



(C1283) GST Inc **\$515**

SyncMaster 955df

19-inch monitor

- Model No.: 955df 19" (18" Viewable)
- 0.20mm dot pitch (Horizontal)
- 1600 x 1200 @ 68Hz Maximum Resolution
- DYNA Flat - Infinitely Flat Tube
- Smart III Surface Treatment
- (Anti-Static & Anti-Glare)
- Onscreen Digital Display
- MPR-II/NUTEK Certified
- Plug & Play Capability



(C3975) GST Inc **\$964**

Wine
on-line?

**VINTAGE
CELLARS**
vintagecellars.
com.au

Power Back Up = Power Protection

● APC Surge Arrest-PNote Pro®



Back-Ups for PC's!

300va

(56229)

GST INC

\$160

500va

(56230)

GST INC

\$215

650va

(56231)

GST INC

\$280



APC

Symmetra

Power Array
8kVA, exp. to
16kVA

(71087)

GST INC

\$15,470

So good we use
it ourselves!



Surge
Arrest 5 Strip
(A0098)

GST INC
\$69

An APC SurgeArrest is your guarantee that your hardware and valuable electronics are protected regardless of lightning strikes and everyday unexpected power surges. SurgeArrest also offers the best protection from line noise which can cause glitches and errors in electronic operations and computer data.

PNote Pro

(99592) GST INC

\$49

The SurgeArrest Notebook Pro Surge Protector provides the mobile notebook professional with advanced AC and telephone line protection. The unique, in-line design creates a compact, lightweight surge protector that is truly portable and appropriate for use in any country throughout the world. With built-in Excess Current Detection, the Notebook Pro warns you against potential modem damage. A Velcro mounting strap and 6 ft. telephone cord eliminate the need to carry any additional accessories.



● APC Back Ups Pro® for Workstations

Smart battery backup & high performance surge suppression for Windows 95 & NT PCs

- PowerChute® Plus software lets your UPS shut down your applications gracefully in the event of an extended power failure
- Additional outlet for protection of printers
- Audible alarms
- Phone/modem protection
- User replaceable, hot swappable batteries



APC Back-UPS Pro **280si** (76636) GST INC

\$249

APC Back-UPS Pro **420si** (76637) GST INC

\$349

APC Back-UPS Pro **650si** (76638) GST INC

\$469

● APC Smart-UPS Rack Mounts® for Servers

Smart-UPS 700, 1000, and 1400 2U Rack Mounts

Network power protection to increase availability of your system. APC Smart-UPS 2U Rackmount features include longer runtime to keep your system safe and a 2U design to save your valuable rack space by 30%. Hot swapping batteries is also now faster and easier with the replacement battery chassis tray.



APC Smart-UPS **2u700VA** (99595) GST INC

\$695

APC Smart-UPS **2u1000VA** (99596) GST INC

\$1,012

APC Smart-UPS **2u1400VA** (99597) GST INC

\$1,423



**HARRIS
TECHNOLOGY™**
for all your
computer
needs!

JUL

20

**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL.

Why spend your money when you can spend ours?

RentSmart and Harris Technology
are proud to introduce Australia's first online
computer finance facility, available to your
business at the Harris website today!

Why Spend your Money when you can Spend ours?

Shop online with Harris and be approved for up to \$15,000 with RentSmart finance in just minutes.

Get more than you think you can afford.

You can afford more with RentSmart through cashflow friendly monthly payments that are fully tax deductible for business purposes.

Update your equipment when you need to.

With RentSmart your business can have the latest equipment, so you're always ahead.

Here's how it works.

1. Simply shop for the equipment you need on the Harris site now.
2. Select RentSmart as your chosen payment method.
3. Complete the quick, secure online application form.
4. If you are approved with RentSmart, your RentSmart account will be automatically set up in just minutes.

RentSmart will then send you your application to sign, and your equipment will be ordered.

Remember, renting is the cost-effective solution for businesses to get the technology they need to succeed.

For further
information phone
1300 855 555

Check out how little RentSmart costs:

Purchase Price (GST Inclusive)	36 Mths (p/week)	24 Mths (p/week)
\$1000	\$10.96	\$13.73
\$2000	\$21.92	\$27.46
\$3000	\$29.42	\$39.11
\$5000	\$45.57	\$62.07

RENTSMART

BECAUSE BUYING ISN'T.

RENTSMART

JUL

21

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au

HARRIS
TECHNOLOGY @ Kmart

Quantum

Check for latest prices & products!

Web
Direct

www.ht.com.au/cat/quantum

If it's important to you, save it with us

Web
Direct

See
Web
Direct
Link

(at top of page)
for
more
products
and
latest
info!



1. Plug into AC power



2. Connect to Ethernet hub



3. Turn Snap Server on

INSTALL UP TO 240GB ON YOUR NETWORK IN MINUTES!!!

New Version v3.0

**Delivering Even Greater Control,
Security and Functionality**

Ease of Use

- Auto-sensing 10Base-T/100Base-TX
- Automatic recognition of network types/clients
- Supports DHCP, BOOTP and RARP
- Configuration via Web browser

Features

- Embedded OS (unlimited user license)
- Pentium-class processor
- Ultra ATA hard drives
- RAID 5, 1 or 0
- Easily supports 100 or more clients
- v3.0 Disk space quota set by administrator
- v3.0 Full functioning FTP server
- v3.0 SNMP support

Compatibility

- Simultaneous support for Windows 2000, NT, Netware, UNIX, Linux and Macintosh networks, and clients across TCP/IP, IPX, NetBEUI and AppleTalk networks
- v3.0 Complete NFS 3.0 protocol support, symbolic linking of files and directories, Network Lock manager and rpcinfo command support.

Network Backup

- v3.0 Compatible with Windows and Netware backup software, including Veritas Backup Exec, Computer Associates ARCserveIT and Microsoft backup software for Windows 95/98/NT/2000
- v3.0 SMART predictive disk failure analysis

Network Security

- v3.0 Set access permissions at file and directory level
- Integrates with Microsoft Domain Controllers or local user list

Guarantee

- 3-year parts and labour

Price

- 20GB (C0034) GST Inc. **\$1,380**
- 40GB (C0035) GST Inc. **\$1,998**
- 80GB (C0036) GST Inc. **\$3,240**
- 160GB (C0037) GST Inc. **\$6,945**
- 300GB (C0038) GST Inc. **\$10,565**

Snap Servers are engineered for one purpose: file sharing. That's why they can be up and running on a LAN in just minutes! Snap Servers offer you the perfect combination of quick and easy installation when compared to an NT server. Snap Servers are pre-configured to work in all major network environments, which means you just plug it in and turn it on, with no network downtime.

Snap!

The Industry Standard



**LOCAL, STATE
OR FEDERAL
GOVERNMENT?
CALL OUR
GOVERNMENT
HOTLINE FOR
SPECIAL
PRICING:
(02) 8879 5086**

JUL
22



© Quantum Corporation. All rights reserved. Quantum and the Quantum logo are trademarks of Quantum Corporation, registered in the U.S.A. and other countries. Snap Server is a trademark of Quantum Corporation. All other product names are trademarks of their respective companies.

HARRIS TECHNOLOGY™

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



OPTISTOR[®]Web
Directwww.ht.com.au/cat/scsi

CD-R/W, Camera's & Caching Towers

PlexWriter 16/10/40A

ATAPI CD - Recorder/Rewriter/Reader with BURN-Proof Technology. Recently voted First Class in BEST Great stuff – tested and approved in top-secret labs of Wired Magazine September 2000. While your friends spend up to half an hour per disc burning audio CDs at 2x or 4x, Plextor's CD-RW drive blasts them out in 6 minutes. The PlexWriter 16/10/40A's name means that it records CD-R discs at 16X speed, rewrites CD-RWs at 10X, and reads back all CDs at 40 speed. Top-notch manuals and software make installation easy. The drive's accuracy is perfect – no misses or skips. Plextor are the leaders in CD-RW. BURN Proof (Buffer Under Run – Proof) enables you to stop writing before buffer under run errors occur and then to continue writing by tying last point of recording and the next start point... no more drink coasters. Our customers are telling us that these drives are the best of the best and they are coming back for more. Comes with software, cables, manuals, ready for installation.



(B7360) GST INC

\$685

HARRIS
TECHNOLOGY.
for all your
computer
needs!

Monitoring & Surveillance Camera **AXIS 2120**

*Keep your premises safe and stop theft
with the Axis 2120 security camera.*



Now you have the power to view and record images in full motion video over your LAN/WAN. If an alarm occurs, video streams can be directed to a local or remote disk drive over a network with simultaneous e-mail/sms alerts sent to an administrator or emergency team. A web browser is all you need to start viewing the images. Easy to install, use and maintain. Featuring:

- In-Built video motion detection.
- Records images when movement is detected.
- For indoor and outdoor surveillance (with optional camera housing).
- Plugs directly into your network (modem port also available).
- Plug and watch over the Internet and any TCP/IP network.



Now you can
collect
Fly Buys points
when you
purchase from
HARRIS
TECHNOLOGY.

(A3916) GST INC **\$2,750**

AXIS[®]
COMMUNICATIONS

CD/DVD Server **CACHING TOWER**



The new Optistor CD/DVD Caching tower is yet another addition to the Optistor NAS (Network Attached Solutions) range. Towers start from 25 CD or 4 DVD Capacity through to 255 CD's or 95 DVD's. Featuring:

- The Axis CDE100 CD-ROM Server,
- Hard disk caching support for up to 255 CD's or 95 DVDs.
- Great news for organisations requiring fast access to information stored on CDs and DVDs!
- Includes DVD-ROM drive to load CD and DVD data

(B6595) GST INC **FROM \$3,675**

OPTISTOR[®]

**Fast
Delivery
Australia-
Wide**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au

HARRIS
TECHNOLOGY **@Target.**

JUL
23

Network storage you can use



MaxAttach NAS 4100 File Server

- Windows, UNIX/Linux, NetWare and Macintosh file sharing
- NAS Powered by Windows operating system
- RAID Levels 0, 1, and 5 data protection
- ADS/NDS/NIS Support
- SCSI port for Back-up
- No per-client license
- Up to 320 GB in 1U
- Gigabit Ethernet

FILE SHARING: MaxAttach NAS 4100 can be used for simultaneous multi-platform file sharing. File locking ensures that any file can be updated by only one client at a time. Clients and servers can be backed up to the MaxAttach file server using the included iSafe for MaxAttach software.



The new MaxAttach NAS 4100 file server delivers seamless integration. With a Windows Powered operating system, the NAS 4100 is network storage that you can manage with the tools you have now. From backup support, to device management, to directory services, the NAS 4100 is the new network storage solution that you already know how to use.

NAS 4100 **160GB**

(B9954) GST INC **\$6,950**

NAS 4100 **320GB**

(B9955) GST INC **\$10,318**



Wine
on-line?



vintagecellars.
com.au

Web
Direct

See
Web
Direct
Link
(at top of page)
for
more
products
and
latest
info!

JUL
24

**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL

Next Generation Backup Solutions

Quantum



HOT
NEW PRODUCT

Quantum DLT8000/S internal 40/80 (82501) GST INC **\$6,390**
Quantum DLT8000/ST 40/80 (82502) GST INC **\$7,240**
Quantum DLT220/S internal (B9821) GST INC **\$11,570**
Quantum SDLT220/ST external (B9823) GST INC **\$12,150**

Quantum



40GB native, 80GB compressed
3-6MB sec sustained, that's 21.6GB/Hour
Ultra Wide SCSI LVD interface
Reads DLT4000 tapes (20/40Gb Only)
Internal or External models
LINUX Approved
Compatible with most common backup software
Standard DLT form factor

INTERNAL (88037)
GST INC **\$3,199**
EXTERNAL (88038)
GST INC **\$3,730**

Maxtor



Max1394-40Gb External Disk Drive
40 Gb Raw Ultra ATA Disk, Firewire ready, or use PCI Card
(B6511) GST INC **\$645**

Max1394-80Gb External Disk Drive
80 Gb Raw Ultra ATA Disk, Firewire ready, or use PCI Card
(B6512) GST INC **\$897**

Max1394PCI Adapter Card for Windows 98/2000
Dual 400 Mb/sec Firewire Interface, Mac and PC Compatible,
Plug and Play
(B4383) GST INC **\$120**

ECRIX



- 33 GB Native, 66GB compressed
- 3-6MB sec sustained, that's 21.6GB/Hr
- SCSI-2 and LVD models available in variety of case colours
- Variable speed operation matches data throughput to your computer
- Packet based technology guarantees reliable restores
- LINUX and Apple Mac approved.
- Compatible with most backup software

INTERNAL (C1847) GST INC **\$2,170**
EXTERNAL (C1915) GST INC **\$2,615**

EXTERNAL BUNDLE PACK (B1856) GST INC **\$2,459**



DLT1 Autoloader

- 400 Gb native, 800 Gb compressed capacity
- DLT1 Single Tape Drive included
- 10 tape capacity
- Overland DLT reliability
- LVD 68 pin SCSI interface

- Includes 1 data tape and cable
- 20 Gb/Hr throughput.
- Optional On-site warranty.

(A0476) GST INC **\$9,800**



media

DLT Tape Media IIIXT
15/30GB Tape
(68362) GST INC **\$80**

IV DLT Tape IV Media
20/80GB
(71231) GST INC **\$155**

DLT Cleaning Tapes
(97851) GST INC **\$93**

Super DLT Media
(B9825) GST INC **\$330**

Exatape 112 - 8mm
(C1976) GST INC **\$12**

Exatape 160 - 8mm
(C1980) GST INC **\$22**

Exatape AME - 125m
(C1986) GST INC **\$105**

Exatape 8mm
Cleaning Tape
(C1982) GST INC **\$29**

Exatape AME 18c
Cleaning Tape
(C1985) GST INC **\$58**

Ecric VXAI - M62
(91103) GST INC **\$89**

Ecric VXAI - M107 20/40
(C3945) GST INC **\$129**

**Other media
tapes available
call Harris for
details**



Everybody's Connecting

enquire
for pricing
on
netgear
10 and
10/100
Mbps hubs.



Wireless connectivity

The NETGEAR 802.11b wireless family allows small businesses to benefit from the productivity gains of an "Always-on, Always-connected" mobile workforce. The products are based on industry-standard 802.11b, so the customer is ensured interoperability as well as security, with WEP encryption. And since it's NETGEAR the products are backed with a 5 year Limited Warranty and Free 24x7 support.



ME102 Wireless Access Point

(B9929) GST INC

\$684



MA401 PCMCIA Adapter

(B9928) GST INC

\$319



MA301 PCI Adapter Cradle

(B9927) GST INC

\$99

Shared internet access

The NETGEAR routers offer the ability to connect to the internet easily using ISDN, analogue or Cable/DSL. All products support IP routing and offer NAT and DHCP for security and ease of set-up.

RM356 Ethernet/56K Analog Router: Connects up to 4 PCs to the Internet using 1 phone line and 1 ISP account

(70197) GST INC

\$549

RT 314 4 Port 10/100 mbps switch with cable/DSL interface

(A8862) GST INC

\$379

RT 311 1 Port 10/100 mbps switch with cable/DSL interface

(97719) GST INC

\$296

MR 314 Wireless NAT Router

(C2297) GST INC

\$899^{RRP}



FR314 4 Port 10/100 mbps cable/DSL firewall router

(B6554) GST INC

NEW

\$659

printer servers



PS 105 10 Mbps Print Server,

(67225) GST INC

\$238

PS 110 10/100 Mbps Print Server, 2 parallel printer ports (67226) GST INC

\$269

PS 113 10/100 Mbps Print Server, 3 parallel ports (A3287) GST INC

\$424

JUL
26

Everybody's Connecting

10/100 Switching Solutions



FS 105 5 port 10/100
autosensing switch
(84722) GST INC **\$154**

FS 108 8 port 10/100
autosensing switch
(70905) GST INC **\$269**

FS 116 16 port 10/100
autosensing switch
(A5347) GST INC **\$518**

FS 516 16 port 10/100 auto-
sensing and internal PSU/Vista
(60522) GST INC **\$809**

FS 524 24 port 10/100 switch
(77549) GST INC **\$999**

FS 524S 24 port
10/100 switch - stackable
(B6540) GST INC **\$1,539**

gigabit switches



GA 622T 32/64 bit PCI
gigabit network card
(B9943) GST INC **\$405** **NEW**

GS 504T 4 port 100/1000
(Copper)
(A1375) GST INC **\$2,205**

GS 508T 8 port 100/1000
port
(B9916) GST INC **\$2,709**

FS 510T 2 port 100/1000 with 8 10/
100 ports (copper)
(A1209) GST INC **\$1,789**

FS 518T 2 port 100/1000 with 16
ports 10/100
(A1374) GST INC **\$2,225**

FS 517TS 16 port
10/100 stackable switch
(C2299) GST INC **\$1,999^{RRP}** **NEW**

starter kits



SB 105 10Mb Hub 2x10/100, PCI,
cables, internet sharing software
(A3293) GST INC **\$119**

FB 105 10/100M Switch 2x10/100,
PCI, cables, internet sharing software
(A3935) GST INC **\$219**



**HARRIS
TECHNOLOGY.**
for all your
computer
needs!

network cards

FA 311
Ethernet
adapter 10/
100 PCI
(A1372)
GST INC **\$40**



FA 312
Ethernet
Adapter
(A1373)
GST INC **\$48**

FA 411
10/100
Mbps PC
Card
(Without
dongle)



(B9944)
GST INC **\$115**

FA 510
Network
Card for
Notebook PC
(81319)
GST INC **\$144**



call 1800 787 638 for 24 hour 7 days a week service support

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au



Order on-line
www.ht.com.au

Intelligent KVM Switches

ServerLink to computer cable

Each end of
the cable
fans out into
three
connectors.
2m cable
for PS/2
mouse,
keyboard
and monitor
(63972)
GST INC

\$27

5m cable
(63976)
GST INC

\$59

2m cable
for
AT/Serial
mouse,
keyboard
and monitor
(63974)
GST INC

\$26

5m cable
(63977)
GST INC

\$59



Wine
on-line?



vintagecellars.
com.au

JUL
28

**Control multiple PCs
or network servers
with a single monitor,
keyboard & mouse**

3 YEAR WARRANTY



**ServerLink
Infinity Range**

What is a ServerLink KVM Switch?

The ServerLink range of Auto KVM switches allow you to take full control of multiple PCs or network servers with just one monitor, keyboard and mouse. There is no software to load – just plug in your computers, plug in your monitor, keyboard & mouse and you are ready to go. All ServerLink KVM switches are hardware only solutions, totally independent of software and network operating systems. This ensures hassle free installation and error free switching & booting.

ServerLink Infinity
Model SL-821
1. Win NT Server
2. Unix Server
3. Mail Server
4. Novell Server
5. Finance Dept
6. Sales Dept
7. Internet Server
8. Linux Server
F1-Help ~ F12 - Move Cur.
F8-Scan Enter-Select
Esc-Exit 1. 2 Select
PgDn-Setup

On Screen Display

- Select computers via On-Screen-Display or front panel
- Name computers for simple selection
- Mouse & keyboard emulation for flawless booting
- Scan Mode for periodic computer monitoring
- Standard cables used throughout
- Cascadable to control up to 256 computers
- 8 & 16 port models 19 inch rack mounted design
- Australian designed and manufactured



**2 Port Model
Now Available**

FROM

\$270

SL-221

PS/2 Computers Only

SL-221	2 Port ServerLink Infinity KVM Switch for PS/2 only	(B3047) GST INC \$270
SL-221-P	2 Port ServerLink Infinity KVM inc. 2 x 2m PS/2 cables	(B3048) GST INC \$315
SL-421	4 Port ServerLink Infinity KVM Switch for PS/2 only	(A9890) GST INC \$330
SL-421-P	4 Port ServerLink Infinity KVM inc. 4 x 2m PS/2 cables	(B2759) GST INC \$429
SL-821	8 Port ServerLink Infinity KVM Switch for PS/2 only	(97888) GST INC \$984
SL-821-P	8 Port ServerLink Infinity KVM inc. 8 x 2m PS/2 cables	(97889) GST INC \$1,159
SL-1621	16 Port ServerLink Infinity KVM Switch for PS/2 only	(97890) GST INC \$1,677
SL-1621-P	16 Port ServerLink Infinity KVM inc. 16 x 2m PS/2 cables	(97891) GST INC \$2,019

PS/2 & AT/Serial Computers

SL-401	4 Port ServerLink KVM Switch for PS/2 & AT/Serial	(63724) GST INC \$737
SL-801	8 Port ServerLink KVM Switch for PS/2 & AT/Serial	(63777) GST INC \$1,230
SL-1601	16 Port ServerLink KVM Switch for PS/2 & AT/Serial	(63778) GST INC \$2,069

The Future of USB is Here...

Check for latest
prices & products!

USB Hub

F5U101



A Belkin USB 4-port hub! This compact modular hub allows you to connect 4 USB devices to a single USB port, and it fits almost anywhere. Take advantage of full Plug-and-Play capability to make installation a breeze.

(96865) GST Inc: **\$95**

FireWire/USB ComboCard **F5U008-PC**

Save your computer's PCI slots by installing two of the fastest technologies in one slot. The Belkin ComboCard gives you the flexibility to configure a computing environment that truly maximises your use of the newest technologies. Add two external and one internal FireWire ports, plus two additional USB ports with a simple, slide-in installation. Also capture digital video on your PC and edit using the included MGI Video Wave III SE and PhotoSuite III SE software.



(C3981) GST Inc: **\$249**

USB VideoBus II **F5U208**

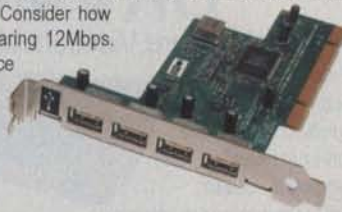
Captivate your audience with exciting graphic effects. You create the show yourself with your PC and camcorder merged into a desktop video studio by the Belkin USB VideoBus II. The Belkin USB VideoBus II, complete with MGI VideoWave III SE software, gives your PC the power to make stunning movies and more!



(B4412) GST Inc: **\$145**

USB QuadraBus **F5U006-UNV**

With the power of QuadraBus™ technology, the Belkin 4-Port PCI Card delivers 12Mbps of bandwidth to each of its four USB ports. Consider how sluggish four connected devices will run sharing 12Mbps. Now see their performance rise four-fold once each USB device receives the full 12Mbps. While other 4-Port PCI cards divide bandwidth, the Belkin 4-port PCI Card multiplies it.



(B2940) GST Inc: **\$126**

Belkin Has All Of Your Mobility Solutions!

Firewire CardBus

F5U512

The Belkin FireWire CardBus Adapter brings the revolutionary speed of FireWire to your notebook computer. Simply slide the card into your laptop's available 32-bit CardBus Type II slot, and get two additional IEEE 1394 ports. Maximise your use of ultra-fast disk, Zip and optical drives, scanners, printers and other peripherals. MGI software incl.



(B6757) GST Inc: **\$191**

MiniScroller

F8E841-Blk

Smaller than the standard mouse, the MiniScroller™ is perfect for travelers. No bulky mouse taking up prime space in your notebook bag. USB or PS/2 compatible, it features 8-directional scrolling and one-touch zoom control. It works with Windows™ 95, 98, Windows NT and W2000.



(C3979) GST Inc: **\$29**

Bridge Street Laptop Bag **F8E158**

Roomy enough to hold today's large screen notebooks, Belkin's Bridge Street laptop case includes a three-section file holder; external file pocket; and extra storage for computing accessories. Also available in Leather, or Ballistic Nylon.



(97271) GST Inc: **\$92**

Don't Forget...

USB Cable

F3U133

A Belkin Pro Series USB device cable will keep those dream machines error free. Features high performance 20-gauge power wires that allow you to maximize the full potential of USB.



*Also available in colors: tangerine, blue, grape, lime & strawberry

USB Device Cables

- A-B, 1.8m - (96893) GST Inc: **\$12**
- A-B, Gold 1.8m - (96875) GST Inc: **\$17**
- A-B, 3m - (96876) GST Inc: **\$14**
- A-B, Gold 3m - (A7753) GST Inc: **\$29**

USB Extension Cables

- Male-Female, 1.8m - (96895) GST Inc: **\$14**
- Male-Female, Gold 1.8m - (96878) GST Inc: **\$18**
- Male-Female, 3m - (96879) GST Inc: **\$17**

Printer Cable

F2A046

This Pro Series Parallel Printer Cable links your IEEE 1284 printer with a Centronics 36-port to your PC with a DB25 port. Featuring our exclusive wiring design & cable technology that guarantees optimal performance & data transfer.



IEEE 1284 Parallel Printer Cables

- A-B, 3m - (96929) GST Inc: **\$35**
- A-B, Gold 3m - (96930) GST Inc: **\$45**
- A-B, 1.8m - (96927) GST Inc: **\$22**
- A-B, Gold 1.8m - (96928) GST Inc: **\$24**
- A-B, 6m - (96932) GST Inc: **\$56**
- A-B, Gold 6m - (xxxxx) GST Inc: **\$Call**

Firewire Cable

F3N400

A high-speed serial bus that bridges the world of consumer electronics and computers. The IEEE 1394 FireWire® Compatible Cable attaches your PC or A/V device to your computer.



FireWire Compatible Cables

- 6-Pin to 6-Pin Cable, 1.8m - (A7782) GST Inc: **\$39**
- 6-Pin to 4-Pin Cable, 1.8m - (A7802) GST Inc: **\$24**
- 4-Pin to 4-Pin Cable, 1.8m - (A7783) GST Inc: **\$49**
- 6-pin to 6-Pin Cable, 4.2m - (A7813) GST Inc: **\$45**
- 6-pin to 4-Pin Cable, 4.2m - (A7812) GST Inc: **\$45**
- 4-pin to 4-Pin Cable, 4.2m - (B2308) GST Inc: **\$45**

BELKIN PERIPHERAL

SHARING

F1D102

-AUS

OmniView 2 Port KVM Switch, Integrated Mouse Conversion, 180 MHz Video (B6748) GST Inc: **\$299**

F1D104

-AUS

OmniView 4 Port KVM Switch, Integrated Mouse Conversion, 180 MHz Video (96915) GST Inc: **\$433**

F1D104

-USB

OmniView 4 Port USB KVM Switch (xxxxx) GST Inc: **\$Call**

Small-Medium Business Networks

HARRIS
TECHNOLOGY™



Target.

Bellarat (VIC),
Camberwell (VIC)

**Kmart
Shoppers!**

Not all
products are
in-store, but
consulting &
advice
available on
all items

For all your
small to
medium
business
and home
network
needs
please call
for more
information
and
pricing.
We have
an
extensive
range of
fantastic
D-Link
products
on our
database.

DWL-1000AP

D-Link Air Access Point

Fast 11 meg Performance. Build The
Size of Your Wireless Network, or
Extend Your Existing Wired Network.

**NEW
Wireless
TECHNOLOGY**



(A9251) GST Inc: **\$995**

DI-804

Cable/DSL Internet Gateway Firewall/Switch

- Integrated firewall
- Configurable via Web Browser / Wizard
- 4 port 10/100 Mbps Ethernet Switch
- Broadband Cable or ADSL support
- Supports DHCP and NAT
- Supports automatic login to Bigpond Cables



**NEW
PRODUCT**

(C2361) GST Inc: **\$389**

DKVM-8

8 Port Keyboard, Video and Mouse Switch

"Easy to use, powerful,
and scalable KVM
solution" • Controls 8
different server PC's w/
keyboard • Utilizes
advanced microprocessor
emulation, 2 sets of cables, user friendly interface.



**NEW
PRODUCT**

(B2656) GST Inc: **\$875**

DWL-120

D-Link Air 11Mbps Wireless LAN USB Adapter

The DWL-120 is a high-performance
11Mbps Wireless USB Network Adapter.
The DWL-120 wireless adapter
allows you to share hard disk
drives, DVD/CD-ROM drives, Zip
drives, printers and provides shared
access to an analogue, Cable, or DSL
modem for Internet access.



**NEW
Wireless
TECHNOLOGY**

(A8487) GST Inc: **\$385**

DES-1008D

8 Port Fast Ethernet Switch

The D-Link DES-1008D is a powerful desktop Dual Speed 8-port
10/100Mb Ethernet/Fast Ethernet NWay auto
negotiating Switch.



(98254) GST Inc: **\$239**

DES-1016R

16 Port Switch for Workgroups

Built with advanced functions,
these switches are
designed for
workgroups with
advanced
requirements. Powerful yet easy to use, they allow users to simply
plug any port to either a 10Mbps or 100Mbps node to multiply
bandwidth, boost response time and satisfy heavy load demand.
Rack mountable.



(98255) GST Inc: **\$775**

Description

D-Link DP-303 10/100 Print Server (3xParallel Port)	(A8876)	\$310
D-Link DU-560M External V.90 56K Voice/Fax/Data Modem (USB)	(98261)	\$105
D-Link DFM-560I Internal PCI V.90 56K Voice/Fax/Data Modem	(74361)	\$59
D-Link DES-3225G 22+2 port 10/100Mbps Mang Switch W/ V-Lan	(90755)	\$1,974
D-Link DFE908DX 8 Port 10/100Mbps Dual Speed Hub	(B7830)	\$279
D-Link DFE-916DX 16 Port 10/100Mbps Dual speed hub	(87207)	\$530
D-Link DFE2624x24-port 10/100Mbps Stackable Dual Speed Hub	(98307)	\$1,145
D-Link DP-602 2 Port Internet Network Server	(81535)	\$379
D-Link DFE-530TX PCI-Bus 10/100Base TX Fast Ethernet Adapter	(62956)	\$42

Part

GST Inc

D-Link is a registered trademark of D-Link Corporation. Specifications subject to change without prior notice. All other names and brands are registered trademarks of their respective owners.

Home Networking & Digital Camera

NEW

DFE-910

Performance Network Kit

Contains, 2 x 10/100 Mb PCI Network Adapters, 1 x 5 port 10/100 Mb Switch, cables, internet sharing software and games.

(88060) GST Inc: **\$285**



Now you can collect Fly Buys points when you purchase from **HARRIS TECHNOLOGY.**

DSC-350

Dual Mode Digital Still Camera

Multi-purpose 350k Digital Camera. Record up to 145 still images or 4.5 minutes of video. Max. resolution 1024 x 768. Up to 30 fps at 640 x 480 resolution in WebCam mode. 8Mb of flash memory. Bundled software and accessories.



(B3268) GST Inc: **\$325**

DSB-C300

USB Digital Video Camera

This WebCam is a high resolution USB digital video camera. The DSB-C300 supports video with 64 million colours at 30 frames per second and 300k resolution using the high bandwidth of USB interface, and advanced light-sensing CMOS technology. As a fully contained unit, no video capture card or additional hardware is necessary.



(C2364) GST Inc: **\$139**

DSB-R100

USB PC Radio

The DSB-R100 provides an easy way to enjoy record and playback FM radio programs. It also supports a flexible tuner function for WAV and MP3 formats, SKIN, audio visualization and Winamp compatible plug-ins.



(C2365) GST Inc: **\$59**

DSB-V100

USB Digital Video Capture Device

The compact box provides a powerful interface between a PC and an analog camera/camcorder/VCR. With the video converter, users can carry out video conference, video mail, surveillance and periodic or through bundled video editing software for family movies to record and save digital video.



(C2366) GST Inc: **\$159**

DSS-5+

5Port 10/100 Mbps Dual Speed Switch

5 port 10/100 Mbps Dual Speed Switch with 5 x RJ-45 ports. Plug-and-Play installation, designed for Gaming, Multimedia and Performance Users.



(89269) GST Inc: **\$179**

DFE-902

Gaming Network Kit

The network kit is for 2 users (peer to peer) the gaming network kit contains, 2 x 10/100Mb PCI network card, 1 x 20' Cat.5 UTP Cross-over Cable, diskette with software drivers.



(C2367) GST Inc: **\$99**

Web
Direct

See
Web
Direct
Link

(at top of page) for more products and latest info!



HARRIS TECHNOLOGY. for all your computer needs!

Connectivity where & when you need it

WORK AND PLAY WHEN AND WHERE IT'S MOST CONVENIENT

This gateway lets your whole family share Internet access, personal files, and resources with or without wires. Designed for cable, DSL, or ISDN users, it works with the 3Com wireless LAN, or any other Wi-Fi-certified PC Card or PCI card to provide secure, reliable connections throughout your home.

- Automatically finds and connects up to 35 wireless clients within 91 metres
- Easy to install—no software required
- Configure through any standard Web browser
- 11 Mbps wireless connections are as fast as most corporate wired LANs
- Three high-speed wired connections provide for video editing, sharing DVDs, transferring large files
- Virtual private network support for secure remote access to corporate networks
- Protect your data with a built-in firewall, 40-bit encryption, and a private network ID
- Wi-Fi certification ensures multivendor interoperability

3Com® Home

Wireless Gateway

(B7460) GST INC **\$779**



Web Direct

See Web Direct Link

(at top of page) for more products and latest info!

IMPLEMENT NETWORK TELEPHONY TODAY?

3Com introduces new OfficeConnect Dual Speed Switches that have extended functionality and are now even more affordable. OfficeConnect's high quality, reliable Dual Speed Switches have lower prices and new features which reinforce 3Com's commitment to radical simplicity and value. The addition of priority queuing makes the switches "voice-ready" which enables customers to implement Networked Telephony today? or tomorrow. No other vendor offers this type of flexibility for a small business applications. The new Auto MDI/X feature simplifies the installation process by automatically adapting to any type of twisted pair Ethernet cable. And customers get a lower price and more ports with the new OfficeConnect Dual Speed Switch 5 and Dual Speed Switch 8. Delivering small business LAN and Security solutions to you and your customers - simply, reliably and at the best prices ever!

3Com® SuperStack®

OfficeConnect Dual Speed

(C3984) GST INC **From \$259**



ICSA Certified
3Com®
OfficeConnect
Internet Firewalls
are approved as
effective firewall
protection by the
worldwide
independent
authority on
Internet security.

PLUG-AND-PLAY WORKGROUP AND BACKBONE SWITCHING

This plug-and-play switch is the lowest cost entry level 3300 switch. 10/100 autosensing adjusts automatically to the speed of the attached devices. Mix and match with other 3Com® SuperStack® switches for the combination that suits you best.

- Works with existing SuperStack Switch 1100s and Switch 3300s to protect your investment
- Stack any two switches together through an integrated matrix port
- Includes 3Com® Network Supervisor software for optimal management
- Policy enforcement with FastIP, IGMP snooping, IEEE 802.1D, and IEEE 802.1Q VLANs
- Dual queues help prioritize multimedia traffic
- Multicast filtering using IGMP snooping/GMRP optimizes bandwidth for video traffic

3Com® SuperStack®

3 Switch 3300 SM

(C2417) GST INC **\$3,585**



JUL
32

Modems and Multimedia

Full Product Info:
www.dynamalink.com.au

Dynamalink 56K V.90 Modem

"Good value for money... ease of setup and use is excellent... consistently connects at high speeds." *PC World Nov 99.*

- V.90 / K56flex dual-mode for high Internet compatibility
- Plug & play, plus friendly QuickGuide for easy installation
- Send and receive faxes from your PC
- Supports FaxStream DUET, Caller ID, Speakerphone Mode & VoiceMail.


5 Year
Warranty

(54361) GST INC **\$128**

Dynamalink USB Modem

- Super-easy Installation.
- Free-up Slots and IRQs.
- No power supply, no messy cables.
- Dual-mode V.90, fax machine, answer machine.
- Pocket sized for convenience and style!


5-Year
Warranty

(A2298) GST INC **\$149**

Dynamalink PC Card

- PCMCIA V.90 56k Modem
- Send & Receive Faxes
- No dongle required


5-Year
Warranty

(A2831) GST INC **\$142**

Dynamalink TV Tuner Video Capture Card

"One of the two best cards in terms of picture quality" *APC, July 9.* Watch TV on your PC & capture incoming video (e.g. from CamCorder). Fully featured, including Teletext & remote control. Resizable window, right up to full-screen (640x480).


Standard: (72860) GST INC **\$129**

With FM Tuner: (78482) GST INC **\$169**

Dynamalink USB WebCam

- Turn your PC into a home video workstation.
- Capture video and digital shots.
- Affordable & simple video conferencing.
- Video software VP-EYE suite included.
- E-mail video clips with sound
- Home security capabilities.
- USB simplicity.


(A2832) GST INC **\$113**

Dynamalink Internal 56k V.90 Modems

- ISA: All the features of the External. Full Hardware with jumpers.
- 5-Year Warranty.
- (77577) GST INC **\$137**
- PCI: PnP, Send & Receive Faxes, Phone Answering Machine.
- (72909) GST INC **\$75**



LOCAL, STATE OR FEDERAL GOVERNMENT? CALL OUR GOVERNMENT HOTLINE FOR SPECIAL PRICING: (02) 8879 5086

Modems & FireWire

SWANN SPEED DEMON 56K V.90 MODEM

- Easy To Use, Speed & Reliability.
- Great Value For Money.
- Includes Software & Cable.
- 1 Year "Hassle Free" Warranty.


(87970) GST INC: **\$105**

SWANN SMART TURBO 56K V.90 MODEM

- Crystal Clear Hands Free Voice Transfer.
- 56K V.90 Voice/Fax/Data Modem.
- Intel Modem Chipset.
- Bonus WebWorks 2000 CD ROM.
- 5 Year 'Hassle Free' Warranty.
- 30 Day Satisfaction Guarantee.


(B1846) GST INC: **\$145**

SWANN POWERED 4 PORT HUB

- Mac & PC Compatible
- Allows "Hot Swapping"
- Includes 1m USB cable
- 4 USB Ports - up to 12Mbps transfer
- 1 Year "Hassle Free" Warranty


(75882) GST INC: **\$65**

FIREWIRE™ PCI CARD

3 PORT IEEE 1394 CONNECTIVITY

- Up to 400 Mbps Data Transfer.
- Add FireWire Capabilities To Your Computer At Minimal Cost.
- Enjoy All The Benefits of FireWire Speed, eg: Scanners, Printers, Webcams, Digital Cameras, CD Recorders etc.
- Includes Instructions For Installation.
- 1 Year Warranty.

(C2308) GST INC: **\$130**

SWANN FIREWIRE™ PRO DV KIT

- Speeds of up to 400Mbps.
- Complete Digital Video Editing solution (includes hardware and software).
- IEEE 1394/FireWire card, cable and headset.
- Includes Ulead Video Studio, Kai's PhotoSoap, Kai's SuperGOO, MainActor Video Suite, and Swann VideoWorks.

(A1794) GST INC: **\$209**


HARRIS TECHNOLOGY. for all your computer needs!

Swann also stocks a range of quality accessories for your Palm™ organiser, including our highly popular Screen Protectors, which protect your Palm™ from dust, moisture and scratches.

Internet: www.swann.com.au Tech Support: 1300 13 8321 or tech@swann.com.au

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au

Multimedia: DVD-R, DVD-ROM & BLANK MEDIA

Pioneer DVR-A03 DVD-R/RW DRIVE

One drive...
One complete
recording solution

Features

Writes:

- DVD-R (2x)
- DVD-RW (1x)
- CD-R (8x)
- CD-RW (4x)

Reads:

- DVD-ROM, DVD-Video,
- DVD-R, DVD-RW,
- CD-ROM, CD-R, CD-RW,
- CD-TEXT, Photo CD, Audio CD

Includes

- 2 x DVD-R Media
- 5 x CD-R Media
- SONIC DVD Authoring Software
- VOB DVD/CD Writing Software
- STAEDTLER LUMOCOLOR pen
- Power DVD software decoder



NEW

\$Call

DVR-A03 (C3847) GST Inc:

Pioneer 16x DVD-ROM Upgrade Kit with Hardware Decoder

- Slot loading 16X drive (40X for CD) with installation accessories
- VideoLogic MPEG2 Decoder Card providing output for External Video & Dolby Digital (5.1) Audio
- Includes 2 DVD-ROM games (Baldur's Gate & Blade Runner)
- Bonus 5 DVD movie rental vouchers from Video Ezy valued at \$30
- 2 Year Warranty



DVD-A05SKIT (A4327) GST Inc: **\$495**

Pioneer 16x DVD-ROM Upgrade Kit with Software Decoder

- Slot loading 16X drive (40X for CD) with installation accessories
- Power DVD Software Decoder
- Bonus 5 DVD movie rental vouchers from Video Ezy valued at \$30
- 2 Year Warranty



BONUS
DVD-ROM GAME
(worth \$90)

DVD-A05SDXE (B0750) GST Inc: **\$274**

Pioneer DVD-R Media

- Jewel Case
- Memory-capacity of 4.7GB
- Suitable for DVD Video & Data backup
- Playable on both DVD-Video players & DVD-ROM drives
- Commercial and Home DVD-Video production
- Large sized data archive storage (not for use with Pioneer DVRS201 authoring drive)



DVS-R470SDF (B9971) GST Inc: **\$25**

DVS-RP470SDF (C2322) GST Inc: **\$30**
• White printable version

Pioneer DVD-RW Media

- Rewritable DVD media
- Jewel case
- Memory capacity of 4.7GB
- Suitable for DVD video & data
- (not for use with Pioneer DVR-S201 authoring drive, does suit Apple G4 "Superdrive")



DVS-RW470SD

(C2326) GST Inc: **\$55**



Web
Direct

See
Web
Direct
Link

(at top of page)
for
more
products
and
latest
info!

Fly Buys.

Collect Fly Buys points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.

JUL
34



Smart Storage Solutions

**protect
connect
SELECT**

Purchase any
External Zip or
CDRW drive
from May 15
until July 31 and
you can choose
from a selection
of gifts!
To register your
purchase visit
our site...

www.iomega.com/anz

Peerless **NEW**

The next generation in high-capacity removable storage Iomega's Peerless(TM) drive system offers 10GB and 20GB disks, interchangeable interfaces, and 15MB/sec transfer rates for stunning performance. Slim, modular design provides reliability, speed and portability, for rich digital content. Firewire® and USB 1.1 interfaces available.

(C3525) GST Inc: **\$894**



Predator **NEW**

Iomega Predator CD-RW drive

Iomega® Predator(TM) Firewire (8x4x32) drive. Announcing the latest addition to the hottest looking external CDRW in the Iomega range - the new Predator with Firewire connection. PC and Mac compatible, the new Predator Firewire allows true drive speed of 8x4x32, and provides versatility with interchangeable USB & PCMCIA adapters.



Predator™ USB Iomega
CD-RW External

(B4416) GST Inc: **\$549**

Iomega CD-RW™ USB
External 4x4x6

(92623) GST Inc: **\$475**

Predator™ Firewire
8x4x32

(C2413) GST Inc: **\$755**

Iomega CD-RW

Internal Drive

Iomega ZipCDRW Internal drive is the ideal way to store, share and archive information in a common 650MB format. Compatible with Windows 2000. Also ships with Adaptec Easy CD Creator v4.02c and Direct CD 3.01.



16x10x40

(C2414) GST Inc: **\$549**

12x10x32

(B0882) GST Inc: **\$449**

QuikSync3 **NEW**



Transparent and simultaneous backup software for network drives, hard drives or removable storage drives - including all Iomega drives.

(C0041) GST Inc: **\$42**

Host Powered 250 USB

NEW - Host-powered Zip® 250MB USB drive. Now it's even easier to take your information with you. The Zip® 250 USB drive is now available with a USB cable that provides both data and power, so you don't need any external power source. Its easy to connect (just plug it in) and easy to launch (no rebooting). Also comes with the new U-shaped Zip® 250MB disk. This new drive is compatible with most major operating systems and all Zip 100MB and 250MB Zip disks.



Host powered
250 USB

(B6404) GST Inc: **\$395**

250MB USB
Drive

(82633) GST Inc: **\$410**

HipZip

Announcing Iomega's new HipZip™ Digital Audio Player. With its sleek design, this palm-sized player lets you download your favourite MP3 & Windows Media format tunes from the internet, & play them anywhere. The HipZip™ also acts as a PocketZip storage device: download & transport music, spreadsheets, images, etc, up to 40MB per disk.



(B1436) GST Inc: **\$559**

Zip 100MB
disk: (23772)
GST Inc: **\$25**

10-pack:
(21889) GST Inc:
\$210

Zip PCMCIA
SCSI
accelerator
card (35145)
GST Inc: **\$159**

Zip ISA SCSI
Zoom
accelerator
card (21888)
GST Inc: **\$85**

Zip drive carry
case (31823)
GST Inc: **\$49**

Zip parallel
cable (46305)
GST Inc: **\$35**

Zip SCSI
cable (46304)
GST Inc:
\$35

Zip disk labels
20-pack (48059)
GST Inc: **\$5**

Jaz 2GB
External Drive
(78941) GST Inc:
\$749

Jaz 2GB disk
(61652) GST Inc:
\$205

Jaz 2GB 3-
pack (57271)
GST Inc:
\$599

Jaz 1GB disk
(24218) GST Inc:
\$199

Jaz 1GB 3-
pack (32844)
GST Inc:
\$559

Backup and Portable Storage

Verbatim

Slim-line PC Card CD-ROM Drive

"Add a CD-ROM to your Laptop!"



This 24x CD-ROM drive will connect to any PC Card enabled PC or Notebook and is ideal for mobile computing.

(97766)

GST Inc **\$328**

PCI Cards

Add super fast serial and parallel port interfaces to any PCI equipped PC.

(90688)

Priced from
GST Inc **\$77**



ACARD TECHNOLOGY



MirrorSmart RAID System

- ◆ Protect against drive failure
- ◆ Uses IDE drives
- ◆ Connects to any UltraWide SCSI Card
- ◆ Automatic rebuild

(B2913) GST Inc **\$1,099**

Digital Memory & Readers



CompactFlash



With CompactFlash Digital Film you can increase the storage capacity of any compatible digital camera or PDA.

8MB CompactFlash	(B2919)	GST Inc	\$66
16MB CompactFlash	(B2920)	GST Inc	\$78
32MB CompactFlash	(B2921)	GST Inc	\$120
64MB CompactFlash	(B2922)	GST Inc	\$205
128MB CompactFlash	(B2923)	GST Inc	\$410



SmartMedia



SmartMedia cards expand the storage capacity of any compatible digital camera. Suitable for digital cameras from Olympus, Fuji and others.

8MB SmartMedia	(B2914)	GST Inc	\$38
16MB SmartMedia	(B2915)	GST Inc	\$60
32MB SmartMedia	(B2916)	GST Inc	\$109
64MB SmartMedia	(B2917)	GST Inc	\$220
128MB SmartMedia	(C3680)	GST Inc	\$503
SmartMedia Card Adapter	(B2918)	GST Inc	\$109



Flash ATA



These credit-card sized cards use a metal case for maximum ruggedness. Solid state construction offers shock resistance.

8MB Flash ATA	(B9860)	GST Inc	\$85
16MB Flash ATA	(B9861)	GST Inc	\$129
32MB Flash ATA	(B9862)	GST Inc	\$149
64MB Flash ATA	(B9863)	GST Inc	\$249
160MB Flash ATA	(B9865)	GST Inc	\$513
256MB Flash ATA	(B9866)	GST Inc	\$825

* Higher Capacities available



MultiMediaCard



MultiMediaCard is the world's smallest removable flash storage card! Suitable for MP3 players, Mobile phones and Digital Video Cameras.

16MB MultiMediaCard	(B9871)	GST Inc	\$77
32MB MultiMediaCard	(B9873)	GST Inc	\$139
64MB MultiMediaCard	(B9878)	GST Inc	\$295



FlashPath Floppy Adapters



Read your memory cards in your PC's floppy drive. Simply place the card into FlashPath and download your photos.

FlashPath SmartMedia Reader	(B2924)	GST Inc	\$175
FlashPath MultiMediaCard Reader	(B2925)	GST Inc	\$175

USB Digital Memory Readers

Exchange data between your PC, laptop, MP3 player or Digital Camera.



SmartMedia and CompactFlash Card Drive	(B2926)	GST Inc	\$95
ATA Card Drive	(96056)	GST Inc	\$99
*SmartMedia, Memory Stick and CompactFlash Card Drive	(B9882)	GST Inc	\$163
*SmartMedia, Secure Digital/MMC and CompactFlash Card Drive	(B9884)	GST Inc	\$163

JUL

36

Verbatim

Check for latest prices & products!

Web
Direct

www.ht.com.au/cat/verbatim

Copying and Connectivity

Verbatim

CopySmart CD Copier



**Lowest cost
duplicator
ever!!**

Copy discs with a single button press.
Standalone - no PC required.

8x4x32 (B2904) GST Inc **\$990**

NEW 16x10x40 (B9843) GST Inc **\$1,489**

FireWire for Notebook



Adds two FireWire
ports to your
Notebook with a
Cardbus Type II
interface.
Plug and Play!
Supports up to 64
devices
simultaneously

FireWire to
CardBus controller
(2 port)
(B9849) GST Inc
\$120

KOUWELL **IK**



PCI Firewire Cards

Connect your
digital video
camera to your PC.
Download and edit
your own movies.



PCI Firewire Card - 4 ports	(90689) GST Inc	\$109
PCI Firewire Card - 6 ports	(A5161) GST Inc	\$220
PCI Firewire Repeater Card - 5 port	(A5162) GST Inc	\$145
PCI Firewire Repeater - 6 port	(A5163) GST Inc	\$154
PCI Firewire Repeater - 10 port	(A5164) GST Inc	\$205
6 pin to 6 pin Firewire cable	(B2905) GST Inc	\$22

KOUWELL **IK**

USB Hubs & Cards



USB Hub - 6 ports	(79702) GST Inc	\$95
PCI USB Card - 2 ports	(84801) GST Inc	\$44
USB Network Cable	(B2908) GST Inc	\$75
USB to Printer Cable	(84803) GST Inc	\$33
Internal 3.5" USB Hub - 4 ports	(B2909) GST Inc	\$75
USB to 10/100 Ethernet Adapter	(B2912) GST Inc	\$115

KOUWELL **IK** PCI SCSI Cards



The easy way to expand your
PC. Connect multiple SCSI
devices to one card.

PCI Bus, Ultra-SCSI	(90681) GST Inc	\$97
PCI Bus, Ultra-Wide	(90683) GST Inc	\$175
PCI Bus, 2 channel Ultra-Wide	(90684) GST Inc	\$375
PCI Bus, Ultra2-Wide	(90685) GST Inc	\$277
PCI Bus, Ultra 160	(B9847) GST Inc	\$527

KOUWELL **IK**

IDE Acceleration & Expansion Card



Speed up your PC's
new hard disk drives
with this PCI plug in
Ultra DMA 100 card.
Supports transfer
speeds of up to
100MB/s with new
ATA100 drives, and
includes the ability to run up to 4 extra IDE
or ATAPI drives on your system.



PCI IDE Ultra DMA 100 Card	(90688) GST Inc	\$77
PCI IDE Ultra DMA 100 RAID Card	(B8410) GST Inc	\$149

USB 2.0



Introducing
USB 2.0. Faster
than FireWire.
Compatible with
existing USB
peripherals.

5 port Card (B9850)	GST Inc	\$139
4 port Hub (B9851)	GST Inc	\$139

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au



See Page 2
for Locations

JUL
37

Verbatim

Check for latest prices & products!

Web
Direct

www.ht.com.au/cat/verbatim

CD Production Equipment

Verbatim Virtual CD SERVER DiscZerver Cyclone



CD-ROM and DVD sharing on almost any network.

DiscZerver Cyclone 25 - includes 15GB+ Hard Disk storage.

(B9925) GST Inc

\$4,470

(Higher Capacities also available)

Verbatim FILE SERVER FileZerver RAID



Secure and fast information storage on almost any network RAID 0,1+5

FileZerver 60

Includes 3 20GB Hard Disk Drives.

(B9926) GST Inc

\$5,665

(Higher Capacities also available)

PRIMERA TECHNOLOGY, INC.



Signature IV CD Printer

The Signature IV CD Printer prints directly onto printable-surface CD-R or DVD-R media. It's 1200x1200 dpi resolution delivers outstanding detail and clarity onto a wide variety of media surfaces. Four distinct print modes allow the user to specify the level of speed and print quality desired, the fastest of which is just 27 seconds per disc.

(B9917) GST Inc **\$3,298**

Signature Pro CD Printer



NEW

- 2400dpi
 - Superfast
- (C3681) GST Inc **\$4,289**

PRIMERA Composer CD Duplicator

12x CD-R, 4x CD-RW, 32x Read CD duplication system with 50 disc capacity. Burn and Print capable with optional printer.



Composer 12x CD-R Auto Duplicator

(Printer & stand not included) (B8872) GST Inc **\$5,435**

PRIMERA Conductor Printer Autoloader

Print up to 50 CD's on your Signature III/IV/Pro or Inscripta printer without having to manually load or unload the discs!



Conductor Printer Autoloader

(Printer & stand not included) (B2934) GST Inc **\$3,398**

Unattended Copiers



Orbit 2 CD Duplicator

Stand Alone CD Duplicator with 1 16x CD-R drive. 50 CD Capacity. An internal CD-ROM Drive holds the master disc being duplicated.



Orbit 2 CD Duplicator

(B9918) GST Inc **\$7,658**



Saturn 2 CD Publishing System

Stand Alone CD Duplicator with 2 12x4x32 CD-RW Drives and in-line colour printer. 150 CD Capacity. Internal 4GB+ hard drive to store your frequently used masters.



Saturn 2 CD Publishing System (B9919) GST Inc **\$17,998**

MultiDrive Towers

Verbatim

Viking Express

The Viking Express CD Duplicators provide powerful CD-R production capabilities in a modular system. 4, 6 and 8 master drive controller towers can be matched now or later with a satellite 4 or 8 drive upgrade tower allowing up to a total of 16 drives all recording simultaneously.



Now
with
16x



Viking Tower Duplicator

- 4 16x drives
- 6 16x drives
- 8 16x drives
- 4 additional 16x drives
- 8 additional 16x drives

- (B9920) GST Inc **\$6,439**
- (B9921) GST Inc **\$7,988**
- (B9922) GST Inc **\$9,534**
- (B9923) GST Inc **\$4,780**
- (B9924) GST Inc **\$7,754**

JUL

38

**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL.

CD-R/CD-RW: Storage for life

CD Recordable - 10 Pack



74 Min.
650MB
1x - 16x
10 pack

(B4329) GST Inc:
\$15

Audio CD Recordable and Rewritable



74 min
recordable
(A2336) GST Inc:
\$2
74 min
rewritable
(B4327) GST Inc:
\$6

CD Recordable - Singles

74 Min. 650MB 1x - 16x Singles



(74740) GST Inc:
\$2

CD Recordable - Printable Surface

74 Min. 650 MB Printable Surface
1x - 12x, 50 spindle pack



*Printable surface
also available in
jewel-case

(93471) GST Inc:
\$79

CD Recordable - 80 Minute Colors



80 Min.
700MB
1x - 12x
colored CD-R's in
matching superslim
cases 25 pack

(B1355) GST Inc:
\$39

CD Recordable - 80 Minute



80 Min.
700MB
1x - 16x
10 Pack

(B4710) GST Inc:
\$17

DataLife Floppy Diskettes



**11th Disk
FREE!**

The world's No 1
Floppy Disk
25HD IBM format
3.5" Floppy Disks

*comes in pack
(79452) GST Inc:
\$6

CD ReWritable

650MB CD Rewritable 2x - 4x



(77492) GST Inc:
\$3
650MB CD
Rewritable High
Speed 4x - 10x
(B2658) GST Inc:
\$5

Accessories

Deluxe Headset with Mic



- Volume control & on/off switch
- Microphone cover to eliminate distortion (C2303) GST Inc:

\$18

Comfort Headset with Mic



- Discreet modern shape for easy wearing (C2304) GST Inc:

\$16

Collapsible Headset with Mic



- Ideal for notebook users. (77819) GST Inc:

\$15

Did you
know...

Verbatim CD's represent the latest in technology. Featuring a proprietary blue Metal-Azo dye which has the best resistance to sunlight, silver reflective layer for optimum read and write performance and multispeed recording.



eiger

Web Direct

www.ht.com.au/cat/eiger

BUSlink Hard Drive. Technology the easy way.



HARRIS TECHNOLOGY.

for all your computer needs!



USB 20Gb
(C3818)
GST Inc:

\$495

BUSlink USB Hard drive is a fast, easy way to add additional storage to your computers. You simply plug the USB card supplied into any PCI slot and you're set to go. Of course, it is Hot Swap capable! BUSlink FireWire has a transfer rate of 400MB/sec or 30 times faster than those USB hard drives. Making BUSlink FireWire Hard Drive ideal for digital video editing and any high speed, high capacity hungry tasks.



CD-RW
(C3821)
GST Inc:

\$495

Buslink's CD-Rewritable Drive allows you to write and rewrite your data files. The Buslink CD-RW Drive includes Adaptec Easy CD Creator and Direct CD software, which enables you to covert MP3 files into Audio CD. A very good system for quick and easy backup and disaster recovery.

Compatible with Windows 98, ME and 2000

NEW PRODUCT



80Gb
Firewire
Package
(C3819)
GST Inc:

\$995

BUSlink FireWire Hard drive is a fast, easy way to add additional storage to your computers. You simply plug the FireWire card supplied into any PCI slot and you're set to go. Of course, it is Hot Swap capable! BUSlink FireWire has a transfer rate of 400MB/sec or 30 times faster than those USB hard drives. Making BUSlink FireWire Hard Drive ideal for digital video editing and any high speed, high capacity hungry tasks.

Web Direct

See Web Direct Link

(at top of page) for more products and latest info!

matrox

Web Direct

www.ht.com.au/cat/matrox

Powerful 2D/3D Video Graphics Card



Millennium G450

(B6886) GST Inc:

\$395

The undisputed industry leader in 2D and 3D Image quality. **Matrox Millennium G450 Dual Head Graphics Acceleration Card**
The Matrox pioneered DualHead display, introduced and made popular by the award winning Matrox G400 series, making the millennium G450 the most versatile and feature-rich graphics card on the market today. DualHead offers a host of display features and software utilities that will change the way you work and play on your PC.

HARRIS TECHNOLOGY.

@ Target.

Ballarat (VIC),
Camberwell (VIC)

Kmart Shoppers!

Not all products are in-store, but consulting & advice available on all items

DualHead Display offers a host of options designed to meet your particular needs.

- DualHead Multi-display
- DualHead Zoom
- DualHead DVDMAX
- DualHead TV Output
- DualHead Clone

Incredibly Sharp and realistic image quality

- UltraSharp, Lightning-fast 360MHz RAMDAC
- Vibrant Color Quality (VCQ2)
- Environment Mapped Bump Mapping which adds a new level of visual realism to many game environments
- More advanced 3D features e.g. Stencil buffering, trilinear filtering, alpha blending etc.

Powerful 2D and 3D acceleration

- Matrox G450 256-bit DualBus
- 3D Rendering array Processor
- Advanced AGP support
- Over 35 games that support Environment-Mapped Bump Mapping (EMBM), or DualHead including: Star Trek, Armada, Baseball 2000, Destroyer Command, Battlezone II, Combat Commander, The Rift etc.

G45+MDHA16DB

OEM (B3110) GST Inc:

\$275

G45+MDHA16LXB

OEM (C0015) GST Inc:

\$210

Millennium Dual Head G450 16Mb DDR no cable or software OEM



G45+MDHA32DB

OEM (B3111) GST Inc:

\$387

G45+MVTA32DRI

OEM (C0016) GST Inc:

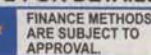
\$678

Marvel G450e TV (PAL) 32Mb DDR inc Matrox PC-VCR and Matrox DVD Inc Ulead Videostudio 4.0 and Ulead Photo Explorer 6.0

JUL 40

HARRIS TECHNOLOGY™

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.





Surround Yourself With The Very Best

Cordless MouseMan® Optical

This comfortable mouse for either hand combines advanced cordless and optical technologies. Digital Radio technology works in a two metre range without being pointed at the computer. Digital Security IDs lock out interference and make the receiver only listen to one mouse. Logitech's smart power management allows the mouse to work for months on the included AA batteries. The low battery indicator gives plenty of warning before needing to change batteries. PC/Mac. 5-year warranty.



(C1186)
GST Inc:

\$147

QuickCam® Traveler

QuickCam Traveler combines easy web communication with the freedom of a digital still camera. It's loaded with features - like a self-timer, macro setting and storage for up to 200 shots. You can adjust resolution or delete duds, then instantly zap the shots into your computer. QuickCam Traveler is also a video camera that plugs into your PC for all kinds of Internet video: video-conference, video-mail, video-greetings, live broadcasting, animation, even remote video surveillance! With the included video editing software, you can create titles and transitions, add music, narration, sound effects and more!



(A8024)

GST Inc: **\$269**

Optical Mouse

(B9948)

GST Inc:

\$49



Cordless TrackMan® FX

(B0831)

GST Inc:

\$155



Marble Wheel

(B7946)

GST Inc:

\$85



Cordless Mouse

(C2310)

GST Inc:

\$89



Deluxe Access 104 Keyboard

(B0819)

GST Inc:

\$44



QuickCam® Pro 3000

With its CCD sensor, QuickCam Pro 3000 takes pictures and videos with true 640x480 resolution. Use its built-in microphone to make live video calls over the Internet and send pictures and videos with your emails. QuickCam software lets you easily setup a digital surveillance camera and broadcast live video and audio over the web. Add professional titles, fades and wipes to your videos with the included MGI software.



(B0805) GST Inc:

\$219

QuickCam® Web

Logitech QuickCam Web has everything you need to capture video, send video e-mail, make live video calls, post web albums, broadcast over the Internet and more. With its integrated microphone and excellent assortment of easy-to-use software, QuickCam Web is the perfect Internet video camera for everyone.



(A2833) GST Inc:

\$179

SoundMan® SR-30

Enhances your gaming experience with realistic surround sound. Discrete 4-channel speakers with powerful subwoofer bring rich sound and solid bass to movies, games and music. Sleek, contemporary design saves space and fits your lifestyle. SoundTouch™ remote with volume dials, on/standby button and headphone jack. Soundmobile.com™ music & software. 2-year hardware warranty.



(A5343) GST Inc:

\$159

TrackMan® Wheel

Thumb-operated TrackMan Wheel combines reliable optical technology with an innovative scroll wheel that acts as a third button. Patented Optical technology provides superior precision, reduced wear, and smooth motion, and eliminates the need for regular cleaning. The scroll wheel provides for easy scrolling and enables you to jump to your favorite web sites. TrackMan Marble also saves desk space, reduces hand and wrist movement, and plugs very easily into your system's USB or PS/2 port. Use it with Windows or Macintosh systems. Includes a five-year warranty.



(C3688) GST Inc:

\$99

Cordless Freedom™ Navigator

Logitech's digital radio technology guarantees a reliability that other cordless devices just can't match. iTouch™ keys offer fast access to the Internet and multimedia. Includes Cordless MouseMan Wheel. 5-Year warranty.



(B1477) GST Inc:

\$185

Cordless Freedom™ Pro

Ideal cordless keyboard and mouse combination for exceptional comfort, cordless freedom and aesthetic design. The split layout with a gentle curvature makes it easy to use. iTouch™ keys for easy access to the Internet and multimedia. 5-Year warranty.



(B1478) GST Inc:

\$209

Video Editing Hardware

DV500 PLUS

Includes full version of Adobe Premiere 6.0

Successor to the award winning DV500 solution DV editing with Analogue output (S-VHS, VHS), DV input and output. Supports all Windows 2000/NT/Me/98SE/98 operating systems. The ONLY real-time editing solution which takes full advantage of all Adobe Premiere 6.0 capabilities with professional quality features such as: Audio effects, Create CDs or files for the Internet or email, Outputs MPEG-1 & 2, Real Networks and AVI, Real-time multi-track audio mixer for volume adjustments, Real-time 16:9 widescreen effects, transitions and titles, TitleDeko RT with video output for title creation previews, Real-time image correction for color and brightness controls



**HOT
NEW PRODUCT**

(B9962) GST INC
\$1,759

Pinnacle Studio VCD

PC users with CD Writers can now record videos on a CD in VCD format.

For playback in DVD players MPEG1-IBP real time encoder solution. Simple trimming tool for recorded MPEG stream.



**HOT
NEW PRODUCT**

Includes full version of **NERO Version 5.0** CD burning software.

(B8630) GST INC
\$199

**FLY BUYS
500
BONUS POINTS**

Collect 500 Bonus Fly Buys points when you purchase B8632, A8908 or 80290 between 20/06/01 - 31/07/01

Wine on-line?



vintagecellars.com.au

Pinnacle Studio Action

Specially created for kids in conjunction with LEGO, suitable for ages 8 and over. Create and edit movies, capture video from any camcorder or VCR. Show your movies on your PC, email it, or put it on the web. Includes USB/video capture device and easy to use Studio Action video editing software.



**HOT
NEW PRODUCT** (B8631) GST INC
\$180

Pinnacle Studio Online

Create movies to be viewed over the Internet.

Includes Studio video editing software. Comes with USB video capture device. Includes Free membership in Pinnacle Systems' video sharing website, with free online storage for your movie files and a complete, personal email package to let everyone know where to view them.



**HOT
NEW PRODUCT**

(B8632) GST INC
\$179

Pinnacle Studio DV Plus

DV editing with Analogue output (S-VHS, VHS), DV input and output. Capture footage in low resolution with the SmartCapture, which then creates the movie in full resolution with minimum disk space usage. Audio effects. Create CDs or files for the Internet or email. Outputs MPEG-1 & 2, Real Networks and AVI.



**FLY BUYS
500
BONUS POINTS**

**HOT
NEW PRODUCT**

(A8908) GST INC
\$549

Pinnacle Studio PC TV

Bringing high quality editing to the home market. Easy-to-use providing full screen and full motion video capture. Up to 25 frames per second, and a transfer rate up to 6 MB per second. With composite & S-VHS video input & output.



Without the 2 GIG file size limitation. Includes Title Deko, Video Spike rack lite, Smartsound software.

**HOT
NEW PRODUCT**

(80290) GST INC
\$220

Professional Video Tools

HAUPPAUGE TV

**Watching Television on your computer
has never been easier with WinTV**

Watch Live TV or video on your PC while surfing the Web. Channel surf 16 channels at once. Professional Teletext reception. Create AVI's and send them to friends via e-mail.

Capture motion video and high quality video stills (1600x1200 pixels) BMP, TIF, TGA, GIF, JPEG formats.

Video clip capture in Microsoft AVI file format - from TV or any video source Video conference over the Internet with Microsoft NetMeeting or CU-SeeMe.

Compatible with Win 95/98/NT 4.0/Win2000 & Linux.

HAUPPAUGE TV	(89063) GST INC	\$140
HAUPPAUGE TV GO - FM	(89064) GST INC	\$186
HAUPPAUGE TV USB	(89066) GST INC	\$244
HAUPPAUGE TV USB - FM	(98455) GST INC	\$285
DV WIZARD	(A8925) GST INC	\$245



HAUPPAUGE PVR

PERSONAL VIDEO RECORDER



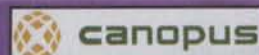
- ☒ Watch and record your TV shows with instant replay and program pause.
- ☒ Watch TV on your PC, in a window or full screen.
- ☒ Pause your TV shows, replay them at any time!
- ☒ Record your TV shows to hard disk using high quality MPEG2 compression!
- ☒ Burn your TV shows onto CD, play them back on your PC, laptop or DVD player!
- ☒ Includes FM stereo radio and IR remote control!

PCI (B2593) GST INC **\$669**

Web
Direct

See
Web
Direct
Link

(at top of page)
for
more
products
and
latest
info!



NEW FEATURES!!!



SONIC FOUNDRY

EZDV & DVRAPTOR
Need to edit your DV, Author
a DVD & Stream Video
from your WEB SITE... **NOW AVAILABLE**

DV editing:

Bullet-proof, high speed
Canopus DV codec.

DVD creation:

Precise, fast MPEG 1&2
encoding straight from
the editing timeline.

**Adobe
PREMIERE
V6.0**



EZDV

with EZ Edit

(97877) GST INC: **\$499**
with Premiere V6.0
(C0023) GST INC: **\$799**



DV RAPTOR

(A8997) GST INC: **\$998**
with Adobe Premiere V6.0
(C0024) GST INC: **\$1,299**

DV STORM

Introducing DVStorm, a real-time
DV editing system that combines
a high performance feature set
with stability, reliability, and
affordability.

Boasting render-free, real-time
digital video editing, DV and
Analogue input/output, MPEG
output for DVD, plus Web
streaming capabilities, DVStorm
is the ultimate digital video editing
experience!



DV STORM

with Storm Edit

(B4401) GST INC: **\$2,999**
with Adobe Premiere V6.0
(C0025) GST INC: **\$3,299**

VIDEO FACTORY

Make Movies In Minutes



VideoFactory™ is designed
to help you make home
movies, web videos, and
corporate presentations in
a matter of minutes.

VideoFactory includes an
online start up tutorial that
takes you through the video
creation and editing process,

although the straightforward, intuitive
Windows interface allows you to spend less
time learning the software and more time
producing great videos. Edits and effects
are automatically displayed in real time - no
rendering is required for previewing changes.
Hundreds of effect and transition
combinations allowing you to make your video
unique.

VIDEO FACTORY

(A9258) GST INC **\$195**

Sound Forge 5.0

FULL VERSION (B8616) GST INC **\$850**

Sound Forge XP 5.0

LIGHT VERSION (B8619) GST INC **\$199**

FULL VERSION (89068) GST INC **\$199**



**HARRIS
TECHNOLOGY**
for all your
computer
needs!

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au



**Delivery
Australia-Wide**

Can on a Canon, Can Do!

SENSATIONAL NEW PRODUCT - S600

- Four individual ink tanks with low-ink sensor
- Up to 15 ppm black / 10ppm color
- 2400 x 1200 dpi in color (38% greater than 2880 x 720 dpi)
- 8" x 10" photo in approx. 90 seconds
- Advanced MicroFine Droplet Technology™ for exceptional photo-image quality
- Compatibility: Windows® 95/98/2000, Windows NT® 4.0, Windows Me and Mac® OS 8.1 or later

2400x1200dpi
(C4013) GST INC
\$549



LOCAL, STATE
OR FEDERAL
GOVERNMENT?
CALL OUR
GOVERNMENT
HOTLINE FOR
SPECIAL
PRICING:
(02) 8879 5086

PRINTERS



360x720dpi
(A1792) GST INC
\$99

BJC-1000SP Bubble Jet Printer

- Outstanding operating economy.
- Vivid colours, even on plain paper.
- Exceptional photographic quality.
- Automatic image improvement.
- Banner printing and outstanding versatility.



360x720dpi
(A3173) GST INC
\$137

BJC-2100SP Bubble Jet Printer

- New Super Economy mode cuts operating costs by up to 75%.
- High speed printing, up to 5 ppm black text and up to 2 ppm colour.
- Optional colour scanner.
- Now with parallel port.



1440 X 720dpi
(B9834) GST INC
\$214

S400 Bubble Jet Printer

- Super-high resolution, up to 1440 x 720 dpi.
- Brilliant colour inks.
- Operating economy.
- Extraordinary photo printing.
- Optional colour scanner cartridge IS-32.



1440x720dpi
(A3507) GST INC
\$287

BJC-6200 Bubble Jet Printer

- Print speeds up to 10 ppm in black text & up to 7 ppm in colour text & graphics.
- Separate ink tanks for each colour.
- Parallel connectivity for Windows 95/98/2000.
- Optional IS-32 scanner cartridge.



1200x2400dpi
(B9836) GST INC
\$559

S800 Bubble Jet Printer

- Photo Lab printing for the desktop.
- Printing resolutions up to 2400 x 1200 dpi.
- Separate ink tanks for each colour.
- Includes Photo Optimiser Pro and Photo Record image browser software.



600x600dpi
(C3917) GST INC
\$499

LBP810 Printer

- High resolution 600 dpi printing for crisp text and graphics.
- 8 ppm engine speed.
- Wide media compatibility, print transparencies, envelopes, postcards etc.
- Outstanding line definition - equivalent to 2400 dpi horizontally.
- Parallel & USB connections for wide compatibility.

SCANNERS



300x600dpi
(A8919) GST INC
\$99

N340P Flatbed Scanner

- Optical resolution is 300 by 600 dpi with selectable resolution up to 2400 dpi.
- 14 Bit colour input.
- ScanGear Toolbox for easy copy, fax and e-mail operations.
- Simple parallel connection for wide compatibility.



600x1200dpi
(A7655) GST INC
\$129

N640P Flatbed Scanner

- Optical resolution is 600 by 1200 dpi with selectable resolution up to 9600 dpi.
- Revolutionary 39 mm thick design.
- ScanGear Toolbox for easy copy, fax and e-mail operations.
- LIDE Technology for distortion free scanning.



600x1200dpi
(A3522) GST INC
\$159

N650U Flatbed Scanner

- 600 x 1200dpi optical with selectable resolution up to 9600dpi.
- 42 bit input colour depth.
- New Z-lid for scanning thick items.
- Front panel button and software for simple e-mail, fax and copy operations.
- Powered and connected by USB for Windows 98/2000 or Mac OS 8.5+.



1200x2400dpi
(A3523) GST INC
\$259

N1220U Flatbed Scanner

- Amazing 1200 x 2400dpi optical with selectable resolution up to 9600dpi.
- Stylish charcoal and aluminium finish.
- New Z-lid for scanning thick books etc.
- Software for Windows & Mac including OmniPage and PhotoShop LE.



1200x2400dpi
(B9935) GST INC
\$389

CanoScan D1230U Flatbed Scanner

- A4 1200x2400dpi flatbed scanner - optional 1200x2400dpi film scanning.
- Fast one pass USB scanning.
- Stylish charcoal grey and aluminium design.
- Includes Adobe PhotoShop 5.0LE & OmniPage OCR software for Win. and Mac.



2400x4800dpi
(B9840) GST INC
\$759

CanoScan D2400U Flatbed Scanner

- Optical resolution of 2400 x 4800 dpi.
- Film adaptor lid - for accurate scanning of 35mm, 2 1/4" and 4"x5" film.
- Outstanding colour accuracy.
- Ideal for professional studios, graphics and design bureaus.



IXUS
DIGITAL CAMERA
(A3521)
GST INC
\$1,174



PowerShot A10
DIGITAL CAMERA
(C3968)
GST INC
\$734



PowerShot A20
DIGITAL CAMERA
(C3864)
GST INC
\$874

JUL
44

New Tools for the "E" Generation

SnapScan e25

600x1200ppi (9600ppi maximum), 42bit flatbed scanner with USB interface. Features one-touch buttons for scanning direct to e-mail, printer or ScanWise. Includes 3 interchangeable coloured handles. Software package includes Agfa ScanWise, Readiris, Corel PrintOffice 2000 and AGFAnet Print Service. Compatible with Win98/2000/Me and MacOS.



(B6378) GST Inc: **\$255**

SnapScan e20

600x1200 optical resolution (9600 maximum), 36bit, USB interface, Mac & Win98/Win2000Me compatible. Includes 3 interchangeable coloured handles. Software package includes Agfa ScanWise, Readiris and Corel PrintOffice 2000



(B1175) GST Inc: **\$195**



SnapScan e40

1200x2400ppi (9600ppi maximum), 42bit flatbed scanner with USB interface. Software package includes Agfa ScanWise, Readiris and Corel PrintOffice 2000. Compatible with Win98/2000/Me - MacOS

(A5009) GST Inc: **\$314**



SnapScan e52

1200 x 2400ppi (9600 maximum), 48bit flatbed scanner with built in transparency module for transparency and negative scanning. Features one-touch buttons for scanning direct to email, OCR, printer or image manipulation software. USB interface. Software package includes Agfa ScanWise, IRIS Readiris, Adobe PhotoShop LE (Win. Only), Adobe PhotoDeluxe (Mac Only), Ulead Photo Explorer, NTM Web Personal.

(C3805) GST Inc: **\$442**



ePhoto CL18



(99757) GST Inc: **\$265**

Dual mode (still image and live action), compact, easy to use digital camera with USB interface and a resolution of 640x480 pixels. Stores 16-32 images on 2MB internal (non-removable) memory card. Extensive software package includes: Agfa Twain Driver, ArcSoft Video Impression, Corel PrintOffice and PrintHouse (with Agfa PhotoGenie QuickFix technology), MicroSoft Net Meeting, AGFAnet Print Service.



ePhoto CL20

(B1153) GST Inc: **\$340**

Dual mode (still image and live action) megapixel digital camera with USB interface. Resolution of 1280x960 pixels (with PhotoGenie). Stores 10-30 images on 1MB internal memory with a CompactFlash slot for optional storage on CompactFlash cards (card not included). Extensive software package includes: Agfa Twain Driver, AgfaCam Mounter, Agfa PhotoWise 3.0, ArcSoft Video Impression, MicroSoft Net Meeting, AGFAnet client software, Acrobat Reader.



ePhoto CL34



(B2321) GST Inc: **\$499**

Dual mode (still image, video conferencing, video clipping) megapixel digital camera with USB interface. Resolution of 1.3 megapixel - photo quality for perfect prints. Features 2 x digital zoom, auto/manual focus, 4.5cm colour LDC. Stores 4-36 images on internal memory with a Compact Flash slot for optional storage on Compact Flash cards (card not included).



Arcus 1200
SCSI-2. 42 bit.
Transparency
scanning.
Opt. res.
1200x2400ppi
(B9613)
GST Inc:
\$1,359



DuoScan
T2500
SCSI-2. 36 bit.
Transparency
scanning. True
opt. res. 2500
x 1250ppi
(74499)
GST Inc:
\$7,946



DuoScan HiD
(92981)
GST Inc:
\$3,650

Document
Feeder
DuoScan
T1200
(75581)
GST Inc:
\$405

Batch Slide
holder set for
DuoScan
T1200.
(75582)
GST Inc:
\$199



Collect
500 Bonus
Fly Buys
points
when you
purchase
B2321, 99757
between
20/06/01 -
31/07/01

HP DesignJets

HP DesignJet 500

Professional graphics printer for 24" wide photo quality ads and graphics.



HP 500PS 42"

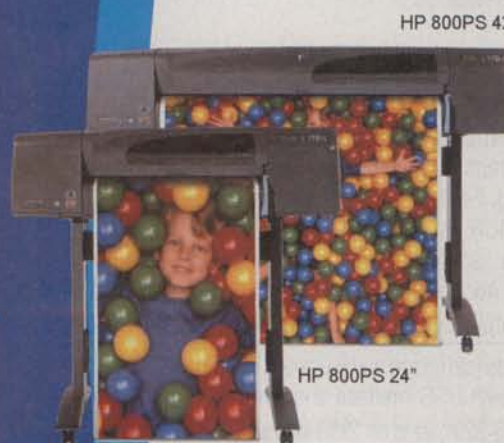
HP 500PS 24"

RES: 1200x600dpi
SPEED: D size line drawings (sec): fast 90/normal 195/ best 360
Colour images (sq m/hr): 7.9 fast/ 3.3 normal/ 2.0 best
MEDIA: Coated & glossy paper, technical media. Sheet & roll feed, auto cutter
SIZES: Sheet: 211mm- 610mm (w) x 211-1897 (l); Roll: 24" (w) x 45.7m (l)
I/FACE: Parallel, USB
SIZE: 1.2 x 0.49 x 0.36m; 38.6kg

HP DesignJet 500 24"	(A7234)	\$4,130
HP DesignJet 500PS 24"	(A7233)	\$5,615
HP DesignJet 500 42"	(B1178)	\$6,670
HP DesignJet 500PS 42"	(B8498)	\$7,730

HP DesignJet 800

Professional graphics printer for 24" wide photo quality ads and graphics.



HP 800PS 42"

HP 800PS 24"

RES: 2400x1200dpi
SPEED: Prints times as short as 60 seconds (D size prints)
MEDIA: Coated & glossy paper, technical media. Sheet & roll feed, auto cutter
SIZES: Sheet: 610mm- 1897mm ; Roll: 24" (w) x 45.7m (l)
I/FACE: Parallel, USB
SIZE: Printer in 2 sizes 42 or 24 Inches wide

HP DesignJet 800 24"	(B8514)	\$10,060
HP DesignJet 800PS 24"	(B8518)	\$14,500
HP DesignJet 800 42"	(B8513)	\$11,860
HP DesignJet 800PS 42"	(B8519)	\$16,730

HP DesignJet 5000

Professional graphics printer photo quality unmatched by any other printer

Come in & see one on display @ our Nth Ryde Location!



HP 5000PS 60"

HP 5000PS 42"

RES: 1200x600dpi on glossy media (6 colours:CMYKcm)
SPEED: max: 46.4 sq m/hr, at max quality 8.27 sq m/hr,
at productivity 6.32 sq m/hr
MEDIA: Coated & glossy paper, backlit, opaque, vinyl, canvas...
SIZES: Sheet: 211mm- 914mm (w) x 559- 1600mm (l);
Roll: 24/36/42" (w), up to 91.4m (l)
I/FACE: Parallel, HP JetDirect 610N 10/100 Base TX Print Server
SIZE: 2.0 x 0.69 x 1.3m: 100kg

HP DesignJet 5000 42"	(B6514)	\$19,590
HP DesignJet 5000PS 42"	(B9792)	\$25,730
HP DesignJet 5000 60"	(B6515)	\$31,235
HP DesignJet 5000PS 60"	(B9791)	\$38,545

**FREE
PRINT
SAMPLE!!**
**GO
TO
WWW.
ht.
com.au**

Web
Direct

See Web
Direct
Link
(at top of page)
for all
your HP
ink &
paper
needs!



JUL
46

LaserJet Printers

HP LaserJet 6L Pro

- 6ppm • economode cuts printing costs by 50% • power save mode reduces energy costs • 18-second first page out • patent instant-on fuser eliminates printer warm-up time • fast return to application • supports a wide variety of media sizes and types (letter, envelopes, transparencies and card stock) • Supports DOS and Windows 3.1, 3.11, 95, 98, NT 4.0 environments

(B4399) GST INC **\$595**



HARRIS TECHNOLOGY
for all your
computer
needs!

HP LaserJet 1200 Series

LaserJet 1200 (base unit) (B9799) GST INC **\$769**

LaserJet 1200n (B9958) GST INC **\$1,286**

- 14 ppm A4 (best-in-class) and first page out in less than 10 seconds • increased memory of 8MB of RAM (upgradable to 72 MB) • protected 250-sheet input tray and 10-sheet priority feed tray • improved duty cycle of up to 10,000 pages • instant-on fuser eliminates warm up time

LaserJet 1220 (B9968) GST INC **\$917**

You can now enjoy the comfort of printing, colour scanning and copying from one machine by simply adding the copier/scanner attachment to your hp LaserJet 1200. Beside enjoying all the best-in-class printing capabilities of the hp LaserJet 1200, you can now take control of your document management with the added benefit of colour scanning and copying.



HP LaserJet 4550 Series



HP Colour Laserjet 4550 A4
16PPM 64Mb
(B2381) GST
INC
\$3,949

HP Colour Laserjet 4550N A4
16PPM 64Mb
10/100
(B2382) GST
INC
\$4,469

HP LaserJet 2200 Series

LaserJet 2200d (base unit) (B9956) GST INC **\$1,519**

LaserJet 2200dn (B9957) GST INC **\$2,009**

LaserJet 2200dtn (B9898) GST INC **\$2,579**

- Improved productivity with faster printing at 18 ppm A4 • best printing resolution of true 1200 x 1200 dpi at full speed • quicker return to application with 133 MHz processor • first page out in 15 seconds with instant on-fuser • print large and complex documents quickly and easily with 8 MB of standard memory (16 MB memory on hp LaserJet 2200dtn) – expandable up to 72 MB • increased duty cycle to 40,000/month



HP LaserJet 4100 Printer

LaserJet 4100 (base unit) (B8399) GST INC **\$2,185**

LaserJet 4100n (B8400) GST INC **\$2,945**

LaserJet 4100tn (B8401) GST INC **\$3,419**

LaserJet 4100dtn (B8402) GST INC **\$3,950**

- Super fast printing at 24ppm A4 print • 250MHz processor ensures quicker return to application • complex documents print faster with 16MB/32MB memory • 12 second first page out • HP Pro-Res & FastRes 1200 dpi print quality at full speed • dynamic RIP-once for faster processing of multiple original prints • duty cycle of 150,000 pages/month



HP LaserJet 3200 Series

Printer, Fax, Copier, Scanner! (C2332) GST INC **\$1,490**

An ideal business solution for small office, home office (SOHO), small/medium business and top level executives, the hp LaserJet 3200 series is four machines in one. Print, fax copy and scan from one machine and it only occupies 1.6 sq. ft. of your desk space!

HP LaserJet 8150 Series

HP Laserjet 8150 (B1981) GST INC **\$4,325**

HP Laserjet 8150DN (B1982) GST INC **\$5,660**

HP Laserjet 8150N (B1986) GST INC **\$4,959**

The new HP LaserJet 8150 series is designed to grow with your business and its needs. It delivers high-volume, high-speed black and white prints and copies for small workgroups to large departments.

- Fast printing at 32 ppm; 32 Mb ram (expandable to 150 Mb); 300 MHz processor



Ask
About...



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

HP OfficeJets, ScanJets & DeskJets

HP OfficeJet T65

All In One Scanner/Printer/Fax/Copier

- Up to 11ppm mono and 8.5ppm colour • 75 page memory • Colour fax capability • 100 speed dials with 10 one-touch keys • junk fax barrier, 20 group speed dials fax forwarding • Colour scanning - up to 1200dpi enhanced 300 x 600 optical 24 bit colour • walk-up colour copy, up to 99 copies from original


(84893) GST INC **\$452**

HP OfficeJet G85

All Colour: Printer, Copier, Scanner & Fax

- Prints at up to 12 ppm black, 10 ppm color using 2400x1200dpi colour with HP photoREt 3, as well as flatbed exceptionally high-quality 36-bit scanning, faster copying speeds, and upgradeable networking capability which allows one unit to be shared by several PCs. Each model combines a color printer, scanner, and copier. Also a convenient walk-up color fax.


(A0062) GST INC **\$1,130**

HP DeskJet 990C

Best Photo-Quality plus Premier Business Printing •

- Infrared printing from PDAs, notebook computers, and other mobile devices. • Up to 17 ppm in black, 13 ppm in color • Optical sensor detects paper type, then selects the ideal print mode HP PhotoREt 3


(B1967) GST INC **\$703**

HP DeskJet 930C

Compact Photo-Quality Colour InkJet Printer

- Alternative 2400x1200dpi mode on photo paper with HP PhotoREt 3
- Excellent results on all types of media in all modes
- Prints up to 9ppm black and 7.5ppm colour


(95761) GST INC **\$255**

HP DeskJet 1125C

Great Value A3 Business Printer

- The HP DeskJet 1125C is an affordable, entry-level wide format printer, designed to meet the needs of small business and home office users.

- Fast printing without compromising print quality - up to 7 ppm black and 5.5 ppm colour.


(A2290) GST INC **\$556**

HP ScanJet 4300C

Scan/copy/e-mail from a brand you can trust

- WYSWYG compatibility
- Dual I/O: USB & Parallel
- 600 dpi optical - 36 bit colour
- Windows 2000 support
- Precision Scan LTX software
- Corel Print House 2000


(A2286) GST INC **\$189**

HP ScanJet 5300C

One-step access makes it easy to scan, copy, e-mail, or fax your images

- Ideal for: Office managers wanting versatility and expandability & first-time scanner users • Optical resolution 1200 dpi, enhanced resolution 9600 dpi, bit depth 36-bit • Maximum document size 8.5 x 11.7 in, 8.5 x 14 in with optional ADF


(93770) GST INC **\$345**

FLY BUYS
200
BONUS POINTS

Collect
200 Bonus
Fly Buys
points
when you
purchase
84893, A0062,
B1967,
95761, A2290,
A2286
or 93770
between
20/06/01-
31/07/01

Web
Direct

See
Web
Direct
Link

(at top of page)
for
more
products
and
latest
info!

JUL

48

HARRIS
TECHNOLOGY™

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.


FINANCE METHODS
ARE SUBJECT TO
APPROVAL.

HP CDRW

HP CD-Writer 8230e Drive

Free Philips Headphones - See Sidebar! (A9131) GST Inc **\$485**

The HP CD-Writer 8230e drive is an external CD-Rewriteable drive with 4x4x 6x performance. Use the drive to create, share, and store data, photos, music, and more on high capacity CDs. Record up to 650 megabytes (MB) of data with CD-writeable (530 MB formatted) and 650 MB (up to 618 MB formatted) with CD-readable.



HP CDRW 9140i & 9500i

Model	9140i	9500i
Speed	8x4x32	12x8x32
Copy & create universally readable CDs	HP MyCD	HP MyCD
CD creation using drag & drop	Adaptec Direct CD 3.01	Adaptec Direct CD 3.01
High speed CD-RW disc formatting	HP Fast Format	HP Fast Format
Full system backup	HP Simple Backup	HP Simple Backup
Multimedia organiser		Broderbund Multimedia Pro
Create stationery, greeting cards & more		Corel Print Office 2000
MP3 downloads	HP Music Jukebox	HP Music Jukebox
CD labelling	CD labeler	CD labeler
Included media	1xCD-R	1xCD-R, 1x high per, CD-RW
Buffering	2MB	4MB
Able to format CD-RW disc under 3 minutes	Yes	Yes
Download MP3 files & store on CD	Yes	Yes
Write & read high performance CDRW media	Yes	Yes
Write & read normal CD-RW media	Yes	Yes
Write & read CD-R media	(A8090)	(A8087)
Part #	\$325	\$559
Inc GST		



Easiest to Install & Use!

You can create data CD's, audio CD's, photo CD's and multimedia CD's. You can either write once (CD-R) or erase and re-write (CD-RW). Each CD holds up to 650MB of data or 74mins of audio.



FREE

PHILIPS
SBC-HS800
Earphones

\$59.95 RRP
with every
**HP CD-W
8230e**

sold along with

FREE
MUSICMATCH
Software and a

FREE
Step-By-Step
Guide to CD
Creation.

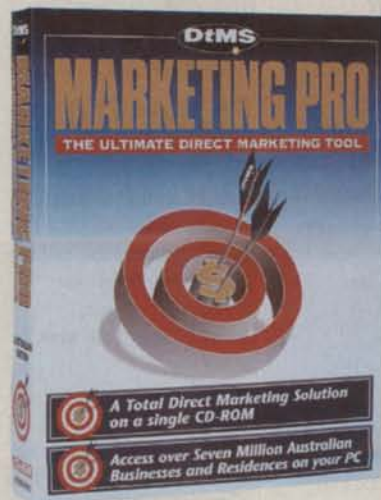
12 May 2001

- 30 July 2001

or whilst stocks last.
(Mail-in redemption)



Generate Direct Marketing Lists



- Generate prospect lists for Direct Mail and Telemarketing campaigns
- Select from more than 8 million business and residential listings for your needs
- Search and segment by business type, street name, post code and more
- Fast, accurate, reliable search capabilities
- Increase your customer base and generate growth
- Available in National, State and City editions.

Web
Direct

See
Web
Direct
Link

(at top of page)
for
more
products
and
latest
info!

MARKETING PRO Single User Prices:

City Edition

(92331) GST Inc: **\$719**

State Edition

(C0212) GST Inc: **\$863**

National Edition

(C0214) GST Inc: **\$1,579**


Think in Colour

NEW PRODUCT

Phaser 860



Truly brilliant colour

An exceptional network-ready powerhouse A4 printer. With superior colour and **LIFETIME FREE BLACK** it's great value for money.

- High performance solid ink
- A4 colour/mono
- 16ppm colour. 1200dpi max
- 16 ppm mono. 1200dpi max
- First page out 10 sec colour
- RAM 64 std; 256 max
- Network ready
- 4 Models to choose from

RENTSMART

SEE PAGE

21

FOR MORE
DETAILS

The figures quoted are based on a per week basis over 3 years. T.A.P, Terms & Conditions apply.

FREE* BLACK

You receive a Free black with every purchase of colour

LIFETIME FREE BLACK - its Great value for money

RENT* \$Call (C4255) GST Inc **\$Call**

Ask
About...



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

JUL

50

Phaser 790

New Standard graphics

The ultimate graphics professional device with superior colour management tools and the ability to handle any challenge, full tabloid bleed page size and varied media.

- Laser
- A4/A3 colour/mono
- 6ppm colour
- 20ppm mono
- First page out 12sec colour
- RAM 64 std; 512 Max
- Network ready

• 2 Models to choose from

RENT* \$113.83
(B2972) GST Inc

\$13,895

Phaser 1235

Bridges the speed gap...

...between mono and colour printing, you receive top quality with great speed and reliability.

- Single pass LED
- A4 colour/mono
- 12 ppm colour. 1200dpi max
- 20 ppm mono. 1200dpi max
- First page out 18sec colour
- RAM 64 std; 512 max
- Network ready

• 3 Models to choose from

RENT* \$66.72
(B2971) GST Inc

\$7,690

Phaser 2135

Fastest all-in-one device

Never again choose between printing fast or colour — or need a separate mono printer. Now everything created can be printed in-house.

- Single pass LED
- A4 and A3 colour/mono
- 21 ppm colour. 1200dpi max
- 26 ppm mono. 1200dpi max
- First page out 18sec colour
- RAM 64 std; 512 max
- Network ready

• 4 Models to choose from

RENT* \$120.59
(B8459) GST Inc

\$14,720

Phaser 750

Great colour and valued

Superior laser print quality, exceptional value-packed network performance, meeting all the demands for your customer's business, everyday day of the week in colour.

- Laser
- A4 colour/mono
- 5 ppm colour. 1200dpi max
- 16 ppm mono. 1200dpi max
- First page out 40sec colour
- RAM 64 std; 256 max
- Network ready

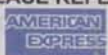
• 4 Models to choose from

RENT* \$43.88
(A1401) GST Inc

\$4,695

**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL

Quicken



Fast delivery
Australia wide

Web
Direct

www.ht.com.au/cat/quicken

Money management made easier!

Quicken: CashBook

Ideal first accounting package for small businesses!



CashBook is a single entry cash accounting package for small businesses. Whether you've just started a business or outgrown manual bookkeeping, this package will easily manage your business finances

CashBook features include:

- Producing quotes, work orders and invoices
- Storing customer and supplier records
- Managing work in progress and updating job
- Accounts receivable and payable tracking records
- GST management for tracking inputs and outputs for the relevant tax codes (except Wine Equalisation Tax)
- Producing the information needed for Business Activity Statements
- Tracking bank balances and printing cheques
- Up to 79 different financial reports and graphs

(A1775) GST Inc: **\$179**

Quicken: Personal Plus

The easiest way to organise your personal investments!



Personal Plus gives you an accurate snapshot of your financial health at anytime. As well as monitoring your bank accounts, savings and investments it also tracks credit cards, mortgages, loans and superannuation. With Personal Plus you can actively monitor your share portfolio and update the value of your portfolio via the Internet**.

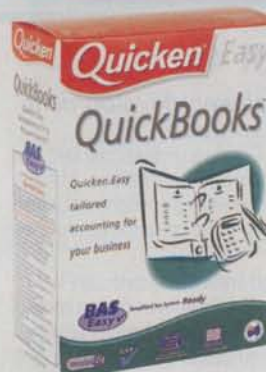
Personal Plus will even alert you when your preset stock price is reached! Other features include the ability to:

- Track GST - for personal transactions only
- Keep tax records automatically
- Easily convert files for use by your accountant
- Handle multiple currencies
- Oversee budgets and forecast future account balances

(A1774) GST Inc: **\$119**

Quicken: QuickBooks

Easier accounting software for sm1 to med business

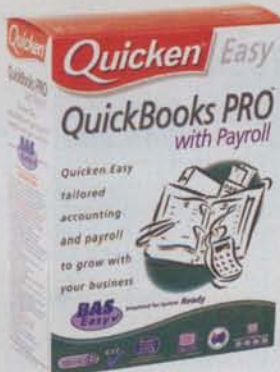


With QuickPayroll, payroll management is a streamlined process, giving you time to manage your business and staff, by spending less time on administration. With the additional reporting requirements bought about by the GST, QuickPayroll gives you the ability to comply with the latest requirements.

(C2379) GST Inc: **\$224**

Quicken: QuickBooks PRO

Recognised as the easiest accounting package to use



QuickBooks PRO is a more comprehensive accounting software package, ideal for fast growing businesses. It has all the features of QuickBooks, with additional business management features like: Time tracking and billing, Estimating and quoting, Progressive invoicing, Multi-user capability - you can add more users as required with Additional User Licence or 5 User Licence(s). Optional payroll management with QuickPayroll PRO.

(C2380) GST Inc: **\$399**

Quicken

Game Pak Deluxe



Transform your hand-held organiser with two dozen games plus a daily crossword puzzle!

(C4291)
GST Inc:

\$call



**HARRIS
TECHNOLOGY**
for all your
computer
needs!

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au



Order on-line
www.ht.com.au

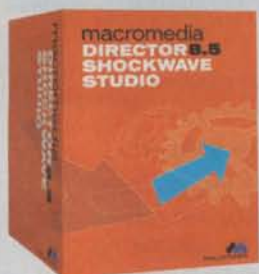
JUL

51

what the web can be.



DIRECTOR 8.5 SHOCKWAVE STUDIO



FULL VERSION (C2453) GST INC: **\$2,459** UPGRADE (C2454) GST INC: **\$519**

DIRECTOR 8.5 Shockwave Studio is the solution for developing magnetic destination content and interactive media on the Web, CD/DVD-ROMs and corporate intranets-including dazzling entertainment, interactive product demonstrations and online learning applications. The Studio Includes Director 8.5, Fireworks 4, Shockwave Multiuser Server 3 and sound editors

**NEW
VERSION**

FOR
MACROMEDIA
ASIA PACIFIC
TECH
SUPPORT
CENTRES
CALL:
1300 65 4754



FREEHAND 10



FULL VERSION (C2461) GST INC: **\$959** UPGRADE (C2460) GST INC: **\$349**

Maximize your creative abilities!

FreeHand 10 offers graphic designers unsurpassed productivity features including Master Pages, the new Macromedia User Interface and sophisticated vector-based illustration tools. Enhance your project workflow by creating once, then publishing across multiple media including print, Web and beyond.

**NEW
VERSION**

Studio Bundles

MACROMEDIA
ULTRADEV 4
FIREWORKS 4
STUDIO



FULL VERSION (B4515) GST INC: **\$1,619**
UPGRADE (B4552) GST INC: **\$479**

MACROMEDIA
DREAMWEAVER
4
FIREWORKS 4
STUDIO



FULL VERSION (B3138) GST INC: **\$1,079**
UPGRADE (B3139) GST INC: **\$475**



FIREWORKS 4



The best solution for Web graphics!

Create, edit and animate Web graphics in a robust professional environment. Add advanced interactivity, optimize images and integrate seamlessly with Macromedia applications for efficient development.

FULL VERSION (B3028) GST INC: **\$639** UPGRADE (B4664) GST INC: **\$334**



WEB DESIGN STUDIO



The Solution for Professional Web Site Design

With Macromedia® Dreamweaver®, Fireworks®, Macromedia Flash™, and FreeHand®, the Macromedia Web Design Studio is the solution of choice for professional Web designers. Design site concepts in FreeHand; create, edit, and optimize images, and add advanced interactivity with Fireworks; use Flash for creating low-bandwidth, high-impact Web experiences; then integrate everything into Dreamweaver where you can design visually or hand-code your Web site.

FULL VERSION (B4410) GST INC: **\$1,529** UPGRADE (B4835) GST INC: **\$1,169**



DREAMWEAVER ULTRADEV 4



Build ASP, JSP or CFML Web applications faster!

Rapidly build database-driven Web applications for industry standard servers and databases and maintain total control over source code with a professional hand-coding environment. Maximize productivity with built-in server behaviors and Live Data Preview.

FULL VERSION (B6785) GST INC: **\$1,249** UPGRADE (A2147) GST INC: **\$365**
(Upgrade from Dreamweaver)



DREAMWEAVER 4



Professional web development solution!

Dreamweaver® 4 Create a professional web site with Intuitive, Macromedia user interface. Manage your site with the text-editing environment which gives hand-coding professionals the control they demand.

Instantly create high-impact Macromedia® Flash™ graphics directly in Dreamweaver, drop in content from Microsoft Office and easily import Fireworks, pop-up menus and buttons to create engaging Web experiences.

FULL VERSION (B3026) GST INC: **\$645** UPGRADE (B3137) GST INC: **\$359**

JUL
52

**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL.

What today's CAD designers want

AutoCAD LT 2002

Choose AutoCAD LT® 2002 to read, share, and generate design data more accurately, collaboratively, and productively. It's the only 2D CAD program that streamlines collaboration through a comprehensive Internet toolset and 100-percent DWG compatibility with AutoCAD® 2002-based products. This yields faster cycle times, reduced costs, and—with enhancements like automated associative dimensioning—more efficient design creation.



FULL VERSION: (C4281) GST INC **\$1,495**
UPGRADE: (C4282) GST INC **\$395**

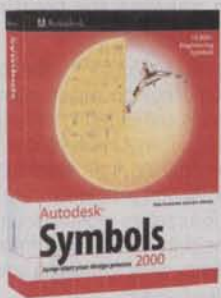
Symbols 2000 Architectural



This professional collection of the most commonly used symbols can significantly improve your productivity by giving you a ready-made library of design elements. With the toolbar-style interface, find any of the 5,600-plus symbols with only 2 mouse clicks, then place where you need.

(A1319) GST INC **\$149**

Symbols 2000 Engineering



Find any of the 10,800-plus symbols with only 2 mouse clicks, then place where you need. Electrical IEC, Electrical JIC, Mechanical DIN/ISO Library, Hydraulics, Pneumatics, Materials Processing and Ventilation, Electronics, Organizational and Planning Libraries.

(A1320) GST INC **\$149**



**Fast
Delivery
Australia-
Wide**

AutoSketch

From concept sketches, information graphics, and floor layouts to presentations, electrical drawings, and home project plans, you can draw it—quickly and accurately—with AutoSketch® Release 7 software.

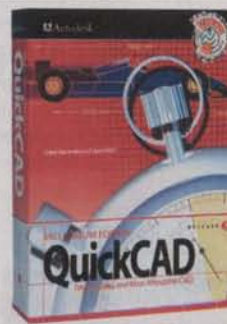
(C4386) GST INC **\$219**



QuickCAD

Begin designing on a computer right away with QuickCAD™ Millennium Edition 7. Plenty of productive features let you make technical designs and diagrams, and you can start drawing the very first time you use it.

(B0897) GST INC **\$89**



**Wine
on-line?**

VINTAGE
CELLARS

vintagecellars.
com.au

STUDENT VERSIONS

**AutoCAD Land
Development
Desktop V.2i**



(C4384)

**AutoCAD
Architectural
Desktop V.3**



(B4517)

**Autodesk
Mechanical
Desktop V.5**



(99703)

**Autodesk
Inventor
V.4**



(C4212)

**AutoCAD
2000i**



(B0888)

**Autodesk
3D Studio
Viz V.3i**



(B1533)

**Discreet
3D Studio Max +
Character Studio**



(86115)

STUDENT VERSIONS AVAILABLE! \$274 EACH*. GST INC.

*Current student ID + course record needed to purchase. *Course must be related to subject- ie: graphic design/ animation & course must be longer than 12 months.

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.
Sales: 1300 13 9999
Fax: 1300 13 6666
Web: www.ht.com.au
Email: sales@ht.com.au

Fly Buys.

**Would you like
FlyBuys with that?**

JUL
53

**See
Web
Direct
Link**
(at top of page)
**for
more
products
and
latest
info!**

**Web
Direct**



Check for latest prices & products!

Web
Direct

www.ht.com.au/cat/adobe

Inspiration becomes reality...



Adobe Design Collection 4.0

Adobe Design Collection contains the following four leading-edge design & publishing applications in one fully integrated suite: Adobe InDesign™ V1.5, Adobe Photoshop® V6.0, Adobe Illustrator® V9.0, Adobe Acrobat® V5.0. Together, these programs give you everything you need to create & produce professional images, illustrations, & layouts, and to publish documents across media.



(C2965) GST INC:
\$2,325

Adobe Publishing Collection 9.0

The Adobe Publishing Collection brings together four of the most powerful software programs available for creating, assembling, and delivering graphically rich designs for print and the Web: Adobe Photoshop® 6.0 (with Adobe ImageReady™ 2.0), Adobe Illustrator® 9.0, Adobe PageMaker® 6.5 Plus, and Adobe Acrobat® 4.0.



(B1154) GST INC:
\$2,325

Adobe Web Collection 3.0

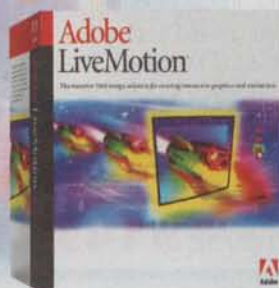
The Adobe Web Collection is a comprehensive, tightly integrated software suite that gives you the power to design extraordinary still and interactive Web graphics, optimize those graphics for efficient downloading, and build dynamic Web sites that support the latest technology. Includes three award-winning Adobe applications: Adobe GoLive™ 5.0, Adobe Photoshop® 6.0, and Adobe Illustrator® 9.0.



(B1152) GST INC:
\$2,425

Adobe LiveMotion 1.0

The intuitive Web design solution for creating interactive animation and graphics

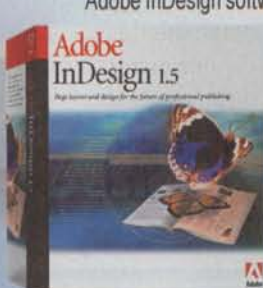


Adobe® LiveMotion™ is the solution for authoring high-impact, interactive elements and engaging animation for the Web. It enables designers to create everything from individual, dynamic Web graphics to complete pages that incorporate motion, sound and interactivity - Work with maximum efficiency while exercising unlimited creative freedom.

(A1519) GST INC: **\$349**

Adobe InDesign 1.5

Page layout and design for the future of professional publishing

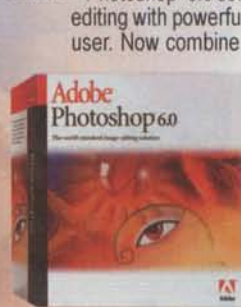


Adobe InDesign software is a new state-of-the-art page layout program that delivers unprecedented creative freedom, productivity, and precision while integrating seamlessly with Adobe's other leading design programs. Adobe InDesign removes the creative barriers presented by previously available publishing software, providing a powerful new set of tools that can shorten the distance between inspiration and reality.

(99471) GST INC: **\$1,625**

Adobe Photoshop 6.0

The world standard image editing solution



Photoshop® 6.0 software introduces the next generation of image editing with powerful new features that offer something for every user. Now combine vector drawing tools and new layer design features that greatly enhance your creative options. Produce the highest quality graphics with an expanded Web tool kit that includes more timesaving features as well as ImageReady™ 3.0 software for advanced Web production tasks. Master the power of Photoshop faster with user-interface enhancements that make it easy to take full advantage of the comprehensive tool set.

(A8347) GST INC: **\$1,429**

Adobe Premiere 6.0

The essential tool for digital video editing

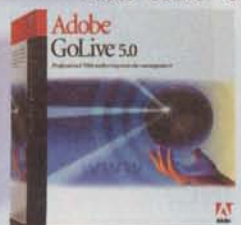


An essential set of tools for creating video for the Web, DVD, CD-ROM, and videotape. Get started quickly with built-in, cross-platform DV support. Easily prepare projects for the Web with one-step output to all the leading Web streaming-video formats. Work more productively with new storyboarding capabilities, enhanced Monitor and Timeline windows, a sophisticated new audio mixer, and a new Effects Control palette. Adobe Premiere 6.0 helps you streamline your most demanding video editing and production tasks.

(B4331) GST INC: **\$1,319**

Adobe GoLive 5.0

Professional Web authoring and site management



Adobe® GoLive™ 5.0 software gives you industrial-strength design, production, and management features so you can create professional dynamic-database-driven Web sites. Tightly integrated with other Adobe products such as Photoshop®, Illustrator®, and LiveMotion™, Adobe GoLive software protects your code from modification and corruption while offering industry-leading site layout and management functionality.

(99749) GST INC: **\$689**

Adobe Open Options Transactional Licence Program

The essential tool for digital video editing

The Adobe® Open Options Transactional License Program (TLP) makes it easy for organizations with as few as ten workstations to participate in volume purchasing. It offers ease of entry, covers most Adobe products, and is available worldwide. The TLP is open to corporate, government, education, and small business customers.

Harris Technology is an Adobe Authorised Reseller who can help you take advantage of the Adobe Open Options Transactional License Program.

For more information, please refer to the Web Direct link above.



For more information on Academic Pricing, call **HARRIS TECHNOLOGY** on 1300 13 9999

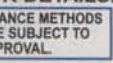
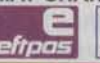


HARRIS TECHNOLOGY for all your computer needs!

JUL
54

HARRIS TECHNOLOGY™

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.





Check for latest prices & products!

Web
Direct

www.ht.com.au/cat/adobe

Everywhere you look™

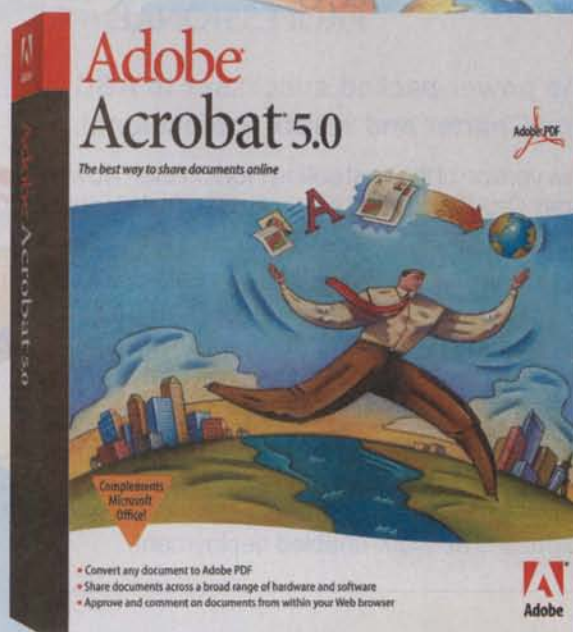


Adobe Acrobat V5.0

Adobe

The best way to share documents online.

What good is a document you can't open? Whether you create business plans, spreadsheets, graphically rich brochures, or Web sites, Adobe® Acrobat® 5.0 software lets you convert any document to an Adobe Portable Document Format (PDF) file. Anyone can open your document across a broad range of hardware and software, and it will look exactly as you intended — with layout, fonts, links, and images intact. With Acrobat 5.0, you and your team can increase productivity by approving and commenting on documents from within a Web browser.



DON'T FORGET
your
Fly Buys
points!

(B9398) GST INC: **\$549**

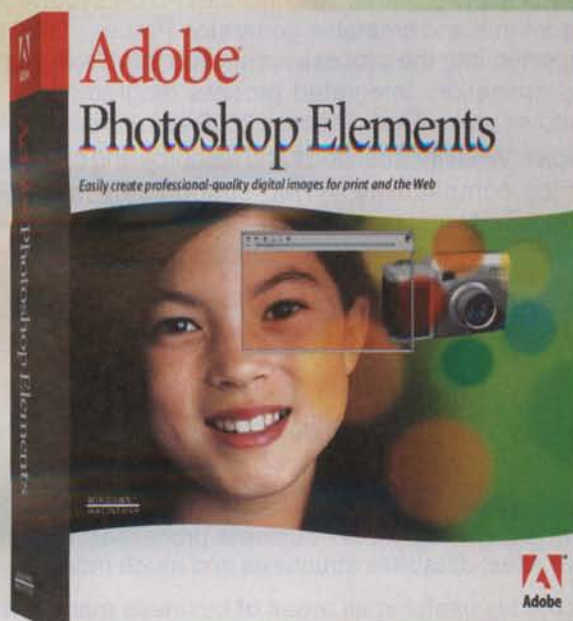


Adobe Photoshop Elements

Adobe

Creating and editing digital images for print and the Web has never been easier.

Adobe® Photoshop® Elements offers unique features designed specifically for amateur photographers, hobbyists, and business users who want an easy-to-use, yet powerful digital imaging solution. State-of-the-art image-editing tools free you to explore your creativity while mastering the elements of digital imaging. Flexible image-capture options let you work with photos taken with digital or traditional cameras, and versatile delivery features enable you to prepare images for print, e-mail, or posting on the Web.



Web
Direct

See
Web
Direct
Link
(at top of page)
for
more
products
and
latest
info!

(C0676) GST INC: **\$220**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au



Delivery
Australia-Wide

JUL

55



Intelligent graphics at work

iGrafx 2000 FLOWCHARTER PROFESSIONAL

NEW
PRODUCT

Fly Buys.

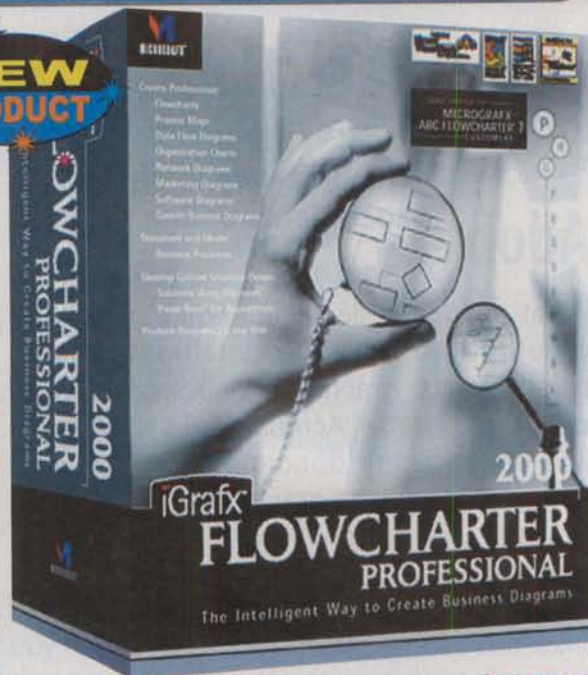
Collect Fly Buys
points on your
computer
hardware
& software
when you
purchase from
**HARRIS
TECHNOLOGY.**

The power-packed successor to ABC
FlowCharter and iGrafx Professional.

New version of the best selling FlowCharter! Now includes
iGrafx OrgCharter, and fully optimised for Windows 2000.

iGrafx FlowCharter 2000 Professional's sophisticated
diagramming power provides professional-quality
diagrams with built-in intelligence that can actually aid
in critical problem solving and decision making. Diagram
business processes, networks, organisational structures
and more.

Features comprehensive Microsoft Office and Visual
BASIC for Applications V6 support, professionally
designed templates for every business need, HTML
output and network-enabled deployment.



(B4376) GST INC: **\$679**

Web Direct

See
Web
Direct
Link
(at top of page)
for
more
products
and
latest
info!

iGrafx 2000 PROCESS

(B7561) GST INC: **\$1,694**

NEW
PRODUCT

New version of the best selling iGrafx Process! Powerful graphical
process diagramming, modelling and simulation capabilities.

New version now includes full copy of iGrafx FlowCharter 2000 Professional
and iGrafx OrgCharter. Also includes Auto-Layout feature, improved simulation
algorithms and timetable generator. Process 2000 now allows for data to be
imported into the process simulation from 'real world systems' with minimal
customisation. Integrated process diagramming, simulation and analysis
features make iGrafx Process 2000 the ultimate tool for process improvement.
Allows 'What If?' scenarios and resource and cost analysis. Features Microsoft
Office compatibility, HTML support, Visual BASIC for Applications v6
extensibility and more.



MICROGRAFX FlowCharter⁷

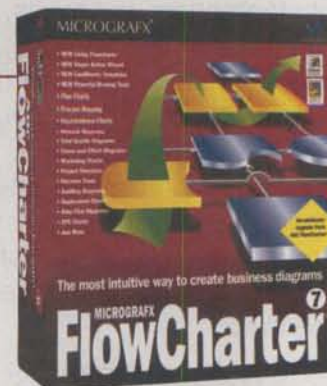
(80162) GST INC: **\$309**

The most intuitive way to create business diagrams

Visually communicate ideas, information and data using this best-selling
software

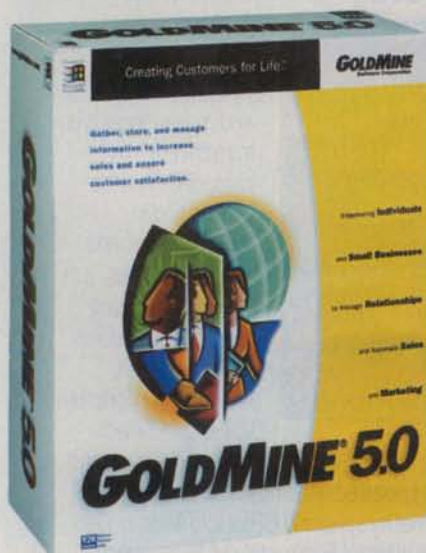
FlowCharter 7.0 creates incredibly powerful, interactive diagrams of just about
everything imaginable – business processes, workflows, computer networks,
web sites, database structures and much more.

Incredibly useful in all areas of business management including Sales and
Marketing, Finance, Human Resources and IT Professionals



Customer management for small businesses

GoldMine 5.0



GoldMine® 5.0 offers flexible customer management and extensive workgroup capabilities with unsurpassed Sales Force Automation functionality. In a word? Awesome. Featuring tools to easily manage every facet of prospect and client information, GoldMine® 5.0 offers small offices, home offices and smaller-sized companies the same benefits usually reserved only for mid-market or larger corporations - but at a fraction of the cost.

(C4294) GST INC **\$309**



Goldmine Express

Powerful Contact and Calendar Management for individuals or work-groups of up to 4 users.

- Calendar - Call Scheduling
- Email - Built in e-mail centre that links to contact records
- Manage Contacts and Accounts - Customisable views for easy access of essential information
- Sales Tracking
- Correspondence - letters, faxes, e-mails and more, managed by inbuilt management centre
- Upgradable to Gold mine 5.0

(C4295) GST IN **\$185**

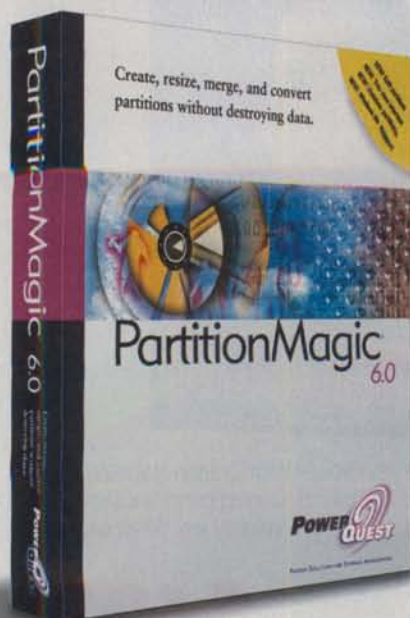


LOCAL, STATE OR FEDERAL GOVERNMENT? CALL OUR GOVERNMENT HOTLINE FOR SPECIAL PRICING: (02) 8879 5086

POWERQUEST®

Easy hard drive partitioning

PartitionMagic V6.0



Learn the secret of hard drive partitioning with the exciting new functionality and ease of use of PartitionMagic 6.0. Dividing a hard drive into several partitions lets you efficiently organize operating systems, programs and data.

- Allows you to merge partitions
- Makes it easy to switch between multiple operating systems
- Create, resize and move partitions on the fly
- Easily move applications between partitions and automatically update the drive letter references after partitioning
- Support for larger drives

(B2223) GST INC **\$109**

Drive Image V4.0



Drive Image is the fastest, easiest tool for complete hard drive imaging. Its robust feature set makes it the perfect solution for backups, system recovery and easy hard drive upgrades

- Wizard driven interface
- Compresses images up to eight times faster than before.
- Windows look and feel
- Full mouse support
- Complete recovery from software or hardware disasters, have back to normal in minutes

(B1080) GST INC **\$129**

Drive Copy V3.0



The safest, easiest, and most affordable way to copy everything from your old hard drive to your new hard drive.

(A1948) GST INC **\$59**

Voice Recognition Software

Dragon NaturallySpeaking Mobile 5.0



Create Documents on the Move!
Dragon NaturallySpeaking Mobile is the go-anywhere dictation solution for people on the move! The palm-sized recorder lets you dictate wherever you are. Later, simply plug the recorder into

your PC and the software automatically transcribes your dictation. The included Dragon NaturallySpeaking Preferred software is a full featured highly accurate, easy-to-use speech recognition product focused on creating and editing text documents.

Dragon NaturallySpeaking Preferred 5.0



Speak at a normal pace - up to 160 words per minute and more - speech is transcribed immediately on the screen and in reports, letters, and e-mail messages, chat rooms, Instant Messaging windows and the Internet. Revise documents by voice. Use Select-

and-Say™ editing and convenient Dictation Playback and Text-to-Speech to speed editing and proofreading. Navigate the Internet by speaking URLs into fields in Web pages when using Internet Explorer 4.0 & 5.0. Launch applications and drop-down menu commands by voice.

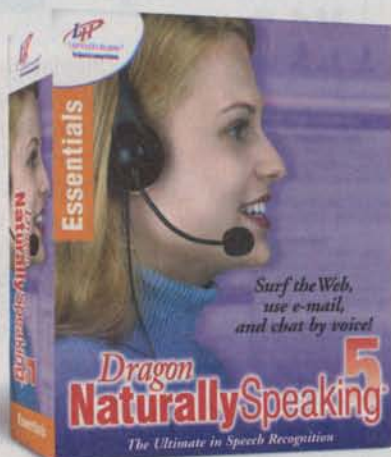
HARRIS TECHNOLOGY.
Target.
Ballarat (VIC),
Camberwell (VIC)
Kmart Shoppers!
Not all products are in-store, but consulting & advice available on all items

(A8641) GST INC **\$489**

Recognises
Australian
Accent

(A8640) GST INC **\$289**

Dragon NaturallySpeaking Essentials 5.0



The ideal affordable introduction to continuous speech recognition for users age 9 and older. Special teen voice models are included so it's easy for young adults to talk into chat rooms and get their homework done easily.

(A8638) GST INC **\$99**

Dragon NaturallySpeaking Standard 5.0



Don't type, just use your voice! With Dragon NaturallySpeaking Standard, the award-winning continuous speech recognition solution. Dictate into virtually any Windows application.

(A8639) GST INC **\$197**

HARRIS TECHNOLOGY.
for all your computer needs!

JUL
58

**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS
ARE SUBJECT TO
APPROVAL



Web
Direct

www.ht.com.au/cat/gfi

Fax-enable exchange 2000!

Also
available for
Exchange
5.5

- Native connector for Microsoft Exchange Server
- Send & receive faxes from Outlook
- Fax from any Windows application
- No separate fax software to learn
- Multi line, 32-Bit fax server
- Remote administration
- Microsoft BackOffice certified

HARRIS
TECHNOLOGY



Broadway (Sydney)
Burwood (Melbourne)

**Kmart
Shoppers!**

Not all
products are
in-store, but
consulting &
advice
available on
all items



FAXmaker



**FAXmaker
for Exchange 2000
25 user pack**

(C4311) GST INC

\$1,433

FAXmaker for Exchange is a native connector for Microsoft Exchange server. This seamless integration allows users to send and receive faxes directly from Microsoft Outlook, making it easier to use and learn. FAXmaker for Exchange is easy to manage too – user administration can be done from the Exchange administrator. The result is increased efficiency and lower total cost of ownership (TCO).

FAX from any Windows application

No matter which Windows application is used, anything a user creates can be faxed. The user simply prints the document to the FAXmaker printer, after which the Outlook New Message pops up automatically. Users can customize their own cover page incorporating a company logo and their own signature.

Outlook FAX forms

FAXmaker includes fax forms for Outlook 98, which add fax options to the menu, enabling the user to enter the details of the recipient, and select certain fax options such as scheduling, resolution and billing codes.

Designed for
 Microsoft
BackOffice



**Fast
Delivery
Australia-
Wide**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

**Sales: 1300 13 9999
Fax: 1300 13 6666**

**Web: www.ht.com.au
Email: sales@ht.com.au**

HARRIS
TECHNOLOGY **Target.**

JUL
59



Computer Associates

NovellWeb
Directwww.ht.com.au/cat/ca

The Perfect Small Business Solution

**BONUS
PRINTER**

Bundle Pack
includes:
ArcServe 7
(Small
Business
Server), Novell
Small
Business
Suite 5.1 and
a bonus
Epson 480
colour printer
(C2613)
GST INC
\$4,149



**For a limited time,
Harris Technology
is giving away an
Epson 480 Colour Printer
with the purchase of
ARCserve for NetWare
and Novell Small Business Suite 5.1**

Novell Small Business Suite 5.1

Novell Small Business Suite 5.1 is the #1 Network for growing businesses. It is an easy-to-use, scalable, reliable and cost-effective network software solution for the growing small business market. Novell Small Business Suite 5.1 provides small businesses with easy methods for installing and configuring their network, connecting to the Internet, helping companies reach broader audiences and take advantage of multiple Internet resources. This latest addition to Novell's small business product line provides companies with the flexibility to expand and organize their businesses, while making networking easier for customers. It is based on NetWare 5.1 and includes key Novell solutions such as GroupWise 5.5, and BorderManager Enterprise Edition 3.5 Firewall (with Caching/Proxy Services) as well as key partners such as Tobit, Oracle, Network Associates, and Pervasive Software.

ARCserve 7 for NetWare

Small Business Server Edition

ARCserve for NetWare, the world's leading NetWare storage solution, fully supports and protects Novell Directory Services (NDS) to provide a native enterprise data protection solution for NetWare. Its advanced features provide easy administration, broad platform support and total scalability to protect your most critical business asset - data. The extensive suite of options available, offer additional client/server support, online backup of business applications, and fast disaster recovery. ARCserve for NetWare provides all the capabilities your business needs to meet its changing dataprotection requirements.

Microsoft®

Web
Directwww.ht.com.au/cat/microsoft

Throw Away Your Mouse Pad!

Intellimouse Optical



Is the second generation of Microsoft mice to use the breakthrough IntelliEye optical sensor technology. The optical sensor provides smooth and precise movement. Optical also is equipped with a wheel for efficient scrolling and has additional buttons to enhance forward and back navigation on the Internet.

(98271) GST INC:

\$67**NO
MOUSE
BALL!**

LOCAL, STATE
OR FEDERAL
GOVERNMENT?
CALL OUR
GOVERNMENT
HOTLINE FOR
SPECIAL
PRICING:
(02) 8879 5086

Intellimouse Explorer



Featuring the most significant improvements to the mouse since it was invented 30 years ago. Intellimouse Explorer is the first mouse to give you superior precision.

(84211) GST INC:

\$75

Natural Keyboard Pro

- 19 hot keys allow you to browse the web, check e-mail or play a CD directly from your keyboard.



- Two USB ports allow you to plug USB devices directly into your keyboard.
- Comfortable, natural design.

(87385) GST INC:

\$88

Wheel Mouse Optical



Brings all the precision and durability of IntelliEye Optical technology to a simple, affordable mouse. Revolutionary optical sensor- no mouse ball.

(A8710) GST INC:

\$45

Internet Keyboard Pro



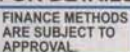
- 19 hot keys allow you to browse the web, check e-mail or play a CD directly from your keyboard.

- Two USB ports allow you to plug USB devices directly into your keyboard.

(A1783) GST INC:

\$67**HARRIS
TECHNOLOGY™**

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

**JUL
60**



Computer Associates

Web
Direct

www.ht.com.au/cat/ca

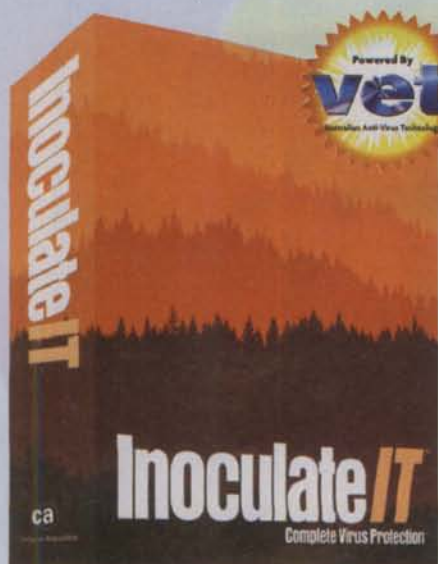
Storage and Anti-virus solutions

Inoculate/IT v6.0 is here!

**NEW
PRODUCT**

Complete Virus Protection

The next generation of CA's award-winning antivirus solution is here! InoculateIT provides superior protection against today's most prevalent security threat - viruses. InoculateIT 6.0 brings together the best technology from CA's antivirus product range, plus new innovations from the Vet antivirus solution.



Powerful product features include:

- Multiple Scanning Engine Support
- Heuristic Virus Detection
- Unparalleled Management
- Realtime Detection and Automatic Cure
- Enforced Security Policies
- ICSA Certified
- Backed by CA's Global Antivirus Research Centres

InoculateIT 6.0 Workgroup Edition - 25 User

(C2475) GST Inc: **\$1,579**

Inoculate IT 6.0 Advanced Edition- 25 user

(C2476) GST Inc: **\$1,998**

Inoculate IT6.0 Add-on Pack - 5 clients

(C2478) GST Inc: **\$310**

Fly Buys.

Shop at

HARRIS
TECHNOLOGY.

and collect

Fly Buys

Points!



ARCserve 7
for Network

Single

Server

(B6727)

GST INC

\$1,349

ARCserve 2000

The industry's most advanced storage solution delivers comprehensive data protection for Windows NT/2000 environments. ARCserve 2000 delivers centralised management, assured virus-free backup/restore, SAN serverless backup and integrated fail-over with Microsoft cluster services.

Learn more about how this industry-leading solution can help you address the eBusiness challenges of availability, scalability and high performance.



ARCserve for Windows NT/2000 - Workgroup Edition

Installs on a single Windows NT server. 250 clients included.

(A2228) GST Inc: **\$1,165**

ARCserve for Windows NT/2000 - Advanced Edition

To backup multiple Windows NT servers with centralised management. Includes 5 FREE NT clients.

(A2229) GST Inc: **\$2,295**

**ARCserve for Windows NT/2000 - Advanced Edition -
Disaster Recovery Option**

(A2234) GST Inc: **\$1,189**

**HARRIS**
TECHNOLOGY.for all your
computer
needs!

JUL

61

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999

Fax: 1300 13 6666

Web: www.ht.com.au

Email: sales@ht.com.au



See Page 2
for Locations

Powerful Information Delivery for the Web



8.5

New Version

crystal decisions

Special offer*
Free t-shirt for every purchase of Crystal Reports.

*T-shirt Bundled with Crystal reports software, while stocks last



crystal reports®

What are the top enhancements?

Powerful Content Creation

- Create rich content from XML, OLAP or relational data sources.
- Design interactive reports with drill down, charts, alerting and parameter prompts.
- Publish reports to a variety of formats including XML, PDF, DHTML, RTF and Microsoft Excel.



Flexible Developer Tools

- Integrate interactive content into rich-client (ActiveX, Java) or zero-client (HTML, DHTML) applications.
- Unleash the power of the Crystal Reports Report Engine through the Report Creation API and the Embeddable Crystal Reports 8.5 Designer Control, allowing your users to design reports from within your application.
- Increase developer productivity with rapid application development tools like the Report Designer Component.

Web Publishing System

- Rapidly deploy your reporting solution to the Web with our new web-based report management system.
- Deliver information real-time with report streaming technology or automate delivery with the flexible new scheduling feature.

Crystal Reports seamlessly integrates into Crystal Enterprise for enterprise scalability.

Crystal Reports 8.5 Developer

Crystal Reports Dev 8.5

(B8685) GST Inc: **\$954**

Crystal Reports Dev 8.5- 5 User

(B8686) GST Inc: **\$3,799**

Crystal Reports Dev 8.5 Upgrade

(B8687) GST Inc: **\$515**

Crystal Reports 8.5 Professional

Crystal Reports Pro 8.5

(B8684) GST Inc: **\$779**

Crystal Reports Pro 8.5- 5 User

(B8683) GST Inc: **\$3,779**

Crystal Reports Pro 8.5 Upgrade

(B8681) GST Inc: **\$599**

Other software Full Version/Upgrade products available. Please call for pricing and information

Now you can collect Fly Buys points when you purchase from **HARRIS TECHNOLOGY.**



LOCAL, STATE OR FEDERAL GOVERNMENT? CALL OUR GOVERNMENT HOTLINE FOR SPECIAL PRICING: (02) 8879 5086

JUL 62

HARRIS TECHNOLOGY™

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS ARE SUBJECT TO APPROVAL.

PC security for your home and office

Norton AntiVirus 2001



Norton AntiVirus™ is the world's leading anti-virus software. It's always working in the background to protect your PC, and now it automatically updates its virus definitions when you're connected to the Internet. AntiVirus protection that is always up to date — **LiveUpdate 1.6** makes download faster all over the world, Smart scanning engine, Bootable CD for emergencies

Norton AntiVirus 2001

\$80
(A5736) GST INC

5 User Pack

\$239
(B2937) GST INC

Norton AntiVirus 7.5 10 User Pack for small managed networks consisting of 1 server and up to 9 workstations, Norton AntiVirus 7.5 Small Business Solution for 10 Users, provides automated, centralised virus protection and management.

Platforms Supported: Network 3.13, 3.2, 4.11, 4.2, 5.X; WinNT v4/2000 Server; OS/2 client; DOS, Win3x; Win95/98; WinNT v4/2000 & Macintosh.

**Small Business
Solution 10 User**

\$985
(B3129) GST INC



**WinFax
Pro 10**
\$110
(96427) GST INC

Norton SystemWorks 2001



**Redemption
by mail-in**

**UPGRADE
\$50
REBATE**
Norton SystemWorks™ 2001 Professional Edition addresses the more sophisticated needs of the power user & small business owner. This suite offers all the tools in the standard edition, plus extra help with managing faxing & fax-on-demand needs, as well as system upgrading & backup tasks. Includes: Norton AntiVirus 2001, Norton Utilities 2001, Norton CleanSweep 2001, Norton Web Services 2001, Norton Ghost 2001, WinFax 10.0 Basic Edition

Professional Edition

\$170
(A7647) GST INC

Retail upgrade *New - Norton SystemWorks 2001 Professional Edition - \$50 rebate coupon in box for previous customers of Norton SystemWorks, Norton AntiVirus, Norton Utilities, Norton CrashGuard, Norton CleanSweep, Norton Ghost Personal Edition, Norton Internet Security. * Customer rebate requests will be sent to and fulfilled by Symantec Aust.

**UPGRADE
\$40
REBATE**
Norton SystemWorks™ 2001 is the smartest way to keep your computer working. It gives you everything you need in one easy-to-use suite, with the most up-to-date versions of leading Symantec™ solutions. The new one-button checkup makes system maintenance as easy as the click of a mouse. Suite includes: Norton AntiVirus™ 2001, Norton Utilities™, Norton CleanSweep™ 2001 & Norton Web Services™

Standard

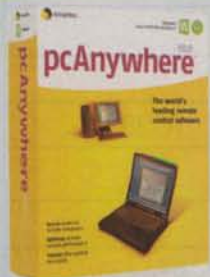
\$130
(A7648) GST INC

Retail upgrade *New - Norton SystemWorks 2001 Standard Edition - \$40 rebate coupon in box for previous customers of Norton SystemWorks, Norton AntiVirus, Norton Utilities, Norton CrashGuard, Norton CleanSweep, Norton Internet Security. * Customer rebate requests will be sent to and fulfilled by Symantec Aust.



**Norton
Utilities
2001**
\$80
(A8009) GST INC

pcAnywhere 10.0



pcAnywhere™ Version 10.0 is the world's leading remote control software. With powerful encryption and authentication, it gives you peace of mind that your remote sessions will be secure. You can also use pcAnywhere with cable and DSL modems for faster remote control sessions. Use the AutoTransfer function to upload or download multiple files automatically.

pcAnywhere 10.0

\$225
(B8553) GST INC

pcAnywhere™ Version 10.0 Small Business Solution 5 Pack includes 1 remote licence and 5 hosts licences pcAnywhere is a comprehensive remote control and file transfer solution for telecommuters and IS/IT professionals. The many customizable features allow you to configure pcAnywhere to meet your needs.

5 user pack

\$445
(C0257) GST INC



**Norton
Clean-
sweep
2001**
\$74
(A8238) GST INC

Norton Personal Firewall

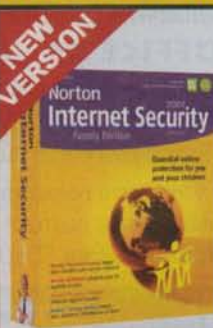


NEW VERSION
Norton™ Personal Firewall 2001 v3.0 is your maximum defense against hackers and other Internet threats. Powerful, easy-to-use Norton Personal Firewall monitors all Internet connections to and from your computer and alerts you to attempted intrusions—including port scans. It can also block Java™ applets, ActiveX® controls, and cookies on a site-by-site basis, permitting you to use your favorite web sites normally while protecting your PC from possible dangers on unfamiliar sites.

\$79

(C0238) GST INC

Norton Internet Security



NEW VERSION
This integrated security and privacy suite helps you defend your computer against hackers with Norton Personal Firewall 2001. You can also get Symantec's award winning Norton AntiVirus 2001 software to stop viruses, malicious ActiveX controls & Java programs, & other dangerous code.

**Standard
Family edition**

Also includes Norton Parental control.

\$98

(C0237) GST INC

\$112

(C0033) GST INC

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au



Order on-line
www.ht.com.au

JUL
63



FLY BUYS
\$5,000
BONUS POINTS
Collect
5000 Bonus
Fly Buys
points
when you
purchase
C2085,
C2081
between
20/06/01 -
31/07/01

\$60
Cash
Rebate
when you
purchase
Office XP
Professional
Subscription
(C2837)
between
01/06/01 -
30/08/01
by redemption

JUL
64

THE NEW OFFICE XP FAMILY!

NOW AVAILABLE - THE SMARTER WAY TO WORK!

Microsoft® Office XP is the most significant version of Office ever released and redefines the relationship between people and software by delivering an exciting new set of experiences that provide a smarter way of working. Office XP delivers a **personal experience**, simplifying the way individuals work; a **collaborative experience**, enabling people to easily collaborate on documents and to work more effectively with others and an **organizational experience** by allowing organizations to increase their overall productivity.

- New **Smart Tags** show you the options you need, right when you need them.
- New **Task Pane** gives you instant access to the features you need most.
- New **Outlook** brings all your personal and professional e-mail together in one place.
- New **Document Recovery** is designed to reliably protect your works-in-progress.
- Send for Review** gathers everyone's revisions all at once, on a single document.
- PowerPoint** includes innovative new features that bring YOUR big ideas to life!
- Office XP meshes information and images more creatively, for more powerful presentations.

Product Description	Office ^{xp} Standard	Office ^{xp} Professional	Office ^{xp} Developer	Office ^{xp} Special Edition	Office ^{xp} Pro. Subscription
Word 2002	✓	✓	✓	✓	✓
Excel 2002	✓	✓	✓	✓	✓
PowerPoint 2002	✓	✓	✓	✓	✓
Outlook 2002	✓	✓	✓	✓	✓
Access 2002		✓	✓	✓	✓
FrontPage 2002			✓	✓	
Developer Tools			✓		
Publisher 2002				✓	
Intellimouse Explorer				✓	
Part Number	(C2082)	(C2084)	(C2772)	-	(C2837)
Full Version (GST INC)	\$980	\$1,177	\$1,567	N/A	\$285
Part Number	(C2083)	(C2085)	(C2773)	(C2081)	-
Upgrade (GST INC)	\$488	\$649	\$1,079	\$894	N/A

Individual applications also available as above!

Ask about Volume Discounts (Licensing)

NEW TO OFFICE XP - PROFESSIONAL SUBSCRIPTION

Get the full functionality of MS Office in an affordable, annual subscription.

- Same functionality as a non-subscription version.
- Same technical support as non-subscription version
- Receive new versions released during your subscription, free of charge.**
- Always be current with your software.
- Manage your IT spend annually.



GO TO WWW.HT.COM.AU FOR AN ONLINE DEMONSTRATION!

HARRIS TECHNOLOGY™

Advantage Pro

Utilising the latest AMD processors, Advantage Pro systems offer the latest PC technology available. Designed for the professional PC user, with power to burn, gamers and performance junkies will not be disappointed.

AMD® Duron™ Processor 800Mhz

128MB 133MHz SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17" Monitor
32MB TNT 2 M64 Display Card
Maxi Sound Muse Sound Card
52x CD-Rom Drive
1.44MB Floppy Drive
Windows Millenium Edition
Microsoft Intellimouse
104Key Keyboard
Adelong 6013 ATX Case
Microlab M-B55 USB Speakers
56K Internal Modem



\$1,765*

SYADE200



AMD® Duron™ Processor 850Mhz

256MB PC133 SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17" Monitor
GeForce II MX 32MB
Maxi Sound Muse Sound Card
16x DVD-Rom Drive
1.44MB Floppy Drive
Windows Millenium Edition
Microsoft Intellimouse
104Key Keyboard
Adelong 6013 ATX Case
Microlab M500 Speaker and Subwoofer
56K Internal Modem



\$2,195*

SYADE202



AMD® Duron™ Processor 900Mhz

256MB PC133 SDRAM
30GB ATA-100 Hard Drive
Philips 107E 17" Monitor
GeForce IIMX With TV out
Creative Sound Bluster Live Digital 5.1
16x DVD-Rom Drive
32x10x4x CD-RW Drive
1.44MB Floppy Drive
Windows Millenium Edition
Microsoft Intellimouse
104Key Keyboard
Adelong 6013 ATX Case
Microlab M1000 Speaker and Subwoofer
56K Internal Modem



\$2,695*

SYADE204



AMD® Athlon™ Processor 1Ghz

\$1,955*

SYADE201



AMD® Athlon™ Processor 1.1Ghz

\$2,399*

SYADE203



AMD® Athlon™ Processor 1.2Ghz

\$2,895*

SYADE205



**3 Year
Onsite
Warranty****

- ◆ 7-Day customer satisfaction guarantee ^
- ◆ Technical support hotline
- ◆ Fully Customizable
- ◆ On Site Warranty Available
- ◆ Secure Store www.adelong.com.au

Systems may vary to that shown in picture.

*Flexirent payments quoted are based on a 36 month commercial rental agreement or consumer lease, payable monthly. Rental payments include GST. Conditions apply. Subject to credit approval.

^ Average delivery for systems within 3 to 5 working days. delivery times vary with parts availability.

*Prices and specifications subject to change without notice

**Conditions Apply

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



www.adelong.com.au

Power Advantage



**3 Year
Onsite
Warranty****



Powered by Intel processors, the Power Advantage is ideal for home or business users, as well as multimedia enthusiasts, who demand computing power with rock solid reliability.

Systems may vary to that shown in picture.

Intel® Pentium® III Processor 866Mhz

128MB 133MHz SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17" Monitor
32MB TNT 2 M64 Display Card
Maxi Sound Muse Sound Card
52x CD-Rom Drive
1.44MB Floppy Drive
Windows Millennium Edition
Microsoft Intellimouse
104Key Keyboard
Adelong 6013 ATX Case
Microlab M-855 USB Speakers
56K Internal Modem

\$1,979*

SYADE208

Flexirent
\$20.30*

Intel® Pentium® III Processor 933Mhz

256MB PC133 SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17" Monitor
GeForce II MX 32MB
Maxi Sound Muse Sound Card
16x DVD-Rom Drive
1.44MB Floppy Drive
Windows Millennium Edition
Microsoft Intellimouse
104Key Keyboard
Adelong 6013 ATX Case
Microlab M500 Speaker and Subwoofer
56K Internal Modem

\$2,479*

SYADE210

Flexirent
\$25.38*

Intel® Pentium® III Processor 1Ghz

256MB PC133 SDRAM
30GB ATA-100 Hard Drive
Philips 107E 17" Monitor
GeForce IIMX With TV out
Creative Sound Blaster Live Digital 5.1
16x DVD-Rom Drive
32x10x4x CD-RW Drive
1.44MB Floppy Drive
Windows Millennium Edition
Microsoft Intellimouse
104Key Keyboard
Adelong 6013 ATX Case
Microlab M1000 Speaker and Subwoofer
56K Internal Modem

\$2,845*

SYADE212

Flexirent
\$27.92*

Intel® Pentium® 4 Processor 1.4Ghz

\$2,795*

SYADE209

Flexirent
\$27.46*

Intel® Celeron™ Processor 733Mhz

\$1,995*

SYADE211

Flexirent
\$20.30*

Intel® Celeron™ Processor 766Mhz

\$2,475*

SYADE213

Flexirent
\$25.15*

*Flexirent payments quoted are based on a 36 month commercial rental agreement or consumer lease, payable monthly. Rental payments include GST. Conditions apply. Subject to credit approval.

^ Average delivery for systems within 3 to 5 working days. delivery times vary with parts availability.

*Prices and specifications subject to change without notice

**Conditions Apply



Adelong Computers

July 2001



SOHO Advantage Systems

64MB 133MHz SDRAM
20GB ATA-100 Hard Drive
Integrated AGP Display Card
Integrated 16bit Sound Card
Integrated 10/100 Ethernet
Philips 105E 15' Monitor
52x CD-Rom
1.44MB Floppy Drive
Windows Millenium Edition
Mouse and Keyboard
ATX Minitower Case
Philips 36W PMPO Pedestal
56K V.90 Internal modem
3 Year Onsite Warranty

AMD Duron 850 Mhz
\$1,435

SYADE196

Flexirent
\$15.00*



64MB 133MHz SDRAM
20GB ATA-100 Hard Drive
Integrated AGP Display Card
Integrated 16bit Sound Card
Integrated 10/100 Ethernet
Philips 105E 15' Monitor
52x CD-Rom
1.44MB Floppy Drive
Windows Millenium Edition
Mouse and Keyboard
ATX Minitower Case
120 Watt Amplified Speakers

AMD Duron 800Mhz
With 1 Year RTB

\$1,199

SYADE194

Flexirent
\$12.46*

Index

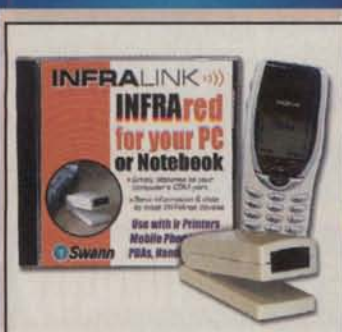
Entertainment System	2
Adelong Systems	3
Adelong Systems	4
Adelong Systems	5
Adelong Systems	6
Adelong Servers / UPS	7
Adelong System / Sound	8
Notebooks	9
Adelong Upgrade Bundles	10
Adelong Upgrade Solutions	11
ThinClient/SCSI Cards/HardDrives	12
Hard Drives / Memory	13
Processors	14
Motherboards	15
Video & Sound Cards	16
DVD / Video Cards	17
Video Editing	18
Firewire / Modems	19
Speakers	20
Cases/Servers/Power Supplies	21
Monitors/CD-Roms/Scanners	22
Monitors	23
CD Burner / Storage	24
Storage	25
Input Devices/Gaming	26
Networking	27
Printers / Scanners /Printer Paper	28
Printers / Scanners	29
Software	30
Data & USB Devices /CPU Switches	31
Terms & Conditions / Order Form	32

FREE

Delivery For Orders Placed On our Website.* www.adelong.com.au

*Subject to terms and conditions. Please see our website for further details.

Swann InfraLink



Expand the functionality of your PC and mobile phone. Customise and edit your phone's logos and ringtones for that personal touch, or conveniently organise your calendar on your PC and upload to your mobile!

\$69 CCSWA003

Adelong Home Theater Bundle

The Home Theatre experience has now become affordable for all, thanks to the Adelong Home Theatre Bundle. The Adelong Home Theatre Bundle offers the advantages of high quality video coupled with true surround sound at an affordable price.

HOT SPECIAL



\$499 SYADE193

MAG LT541F LCD Monitor

- Effective Display Size 15"
- XGA Resolution 1024x768 at 85Hz
- Pixel Pitch 0.297mm



\$1,295 MQMAG007

See Page 17

See Page 17

See Page 19

Give a *Gift Certificate*

www.adelong.com, sales hotline 02 8344 3190



Entertainment System

FASTEST KID ON THE BLOCK

We've gone and built the FASTEST ATHLON system we can!



This 1.33Ghz Record Breaker will leave any serious gamer breathless. Your software will run faster than ever before with the latest AMD Athlon processor, with 266Mhz bus, and DDR ram.

- 128MB PC2100 DDR Ram
- 30G 7200rpm ATA100 Hard Drive
- Philips 109S 19" Monitor
- Guillemot 3D Prophet III
- Creative SoundBlaster Live Digital
- DVD-ROM Drive 16x IDE
- 32x10x4x CD-RW Drive
- 1.44MB Floppy Drive
- Windows Millenium Edition
- Microsoft Intellimouse Explorer
- Microsoft Natural Keyboard Pro
- Adelong 6000P ATX Tower Case
- Microlab M1000 5.1 Speakers
- 56K Internal Modem

• Athlon 1.2Ghz

\$4,395
SYADE198

Flexirent
\$41.76*

• Athlon 1.33Ghz

\$4,445
SYADE199

Flexirent
\$42.23*



**3 Year
Onsite
Warranty**

Adelong Custom Solutions

Adelong Computers offer a wide range of PC's, Upgrade Bundles and Upgrade Solutions to suit a broad range of requirements. Not everyone, however, is satisfied with a standard package, which is why all of our solutions can be fully customised. From a simple Ram upgrade to a completely re-configured PC, Adelong Computers can offer you a quality custom solution at a competitive price.

For a custom solution that meets your requirements, call our sales staff on **(02) 8344 3190**, or email your specifications to **sales@adelong.com.au** for your custom solution quotation.

Flexirent - the modern way to pay for technology



Whether you need a computer for the kids or for work, Flexirent is the way to pay. With no deposit and easy monthly payments, you spread the cost over time. And with the flexibility to trade-up to new equipment, you can continue to move into the latest technology without sacrificing your capital or hard earned savings. What better way to stay ahead? Flexirent instead! For more details phone 1800 240 102. (*When equipment is used for business purposes).



No
Deposit.



Easy
Upgrades.



Tax
Deductible*.



More
Options.



The Power Advantage II



The Power Advantage II features enough blisteringly fast power and bandwidth to satisfy any user today, as well as in the future.

**3 Year
Onsite
Warranty****

Intel® Pentium® 4 Processor

128mb 800MHz ECC RAMBUS RIMM
30G ATA100 7200rpm hard Drive
Philips 109S 19" Monitor
Guillemot 3D Prophet II GTS Ultra 64MB
Creative SoundBlaster Live Digital
16x DVD-Rom Drive
32x10x4x CD-RW Drive
1.44MB Floppy Drive
Windows® Millenium Edition
Microsoft® Intellimouse Explorer
Microsoft® Natural Keyboard Pro
Adelong 6000P ATX Tower Case
Microlab M81000 4.1 Speakers
56K Internal Modem

Visit our
exciting
website
for
latest
prices &
products

Intel® Pentium® 4 Processor 1.4Ghz

\$4,599

Flexirent
\$42.46*
per month
incl GST

SYADE214

Intel® Pentium® 4 Processor 1.5Ghz

\$4,795

Flexirent
\$44.30*
per month
incl GST

SYADE215

Intel® Pentium® 4 Processor 1.7Ghz

\$4,999

Flexirent
\$46.15*
per month
incl GST

SYADE216

Adelong Systems

Power Advantage Video Edition

The Power Advantage Video Edition is the complete solution for the professional video editor. Featuring the Matrox RT2000 editing card, with its extensive features, and Adobe Premier 5.1, real time editing becomes a breeze.



- Intel® Pentium® 4 Processor 1.4Ghz
- 128MB 800 Mhz ECC RAMBUS RAM
- Dual 20Gb ATA100
- Philips B2018 21" Monitor
- Matrox G400 Flex Graphics Card
- Matrox RT2000 Video Editing Card
- Creative SoundBlaster Live Digital
- 32x10x4x CD-RW Drive
- 1.44MB Floppy Drive
- Windows® Millenium Edition
- Microsoft® Intellimouse Explorer
- Microsoft® Natural Keyboard Pro
- Adelong 6013 ATX Tower Case
- Microlab M1000 5.1 Speakers
- 56K Internal Modem
- 3 Years Onsite Warranty

\$7,295

SYADE217

Flexirent
\$64.15*
per month
incl GST

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



www.adelong.com.au



Adelong Systems

Power Advantage Graphic Edition

The Power Advantage Graphic Edition is a powerful addition to your design or publishing studio. Equipped with the Matrox G450 display card, the Graphic Edition will power through ultra high resolution projects without sacrificing productivity.

Visit our
exciting
website
for
latest
prices &
products

- Intel® Pentium® III Processor 1Ghz
- 256MB PC133 SDRAM
- Dual 20Gb ATA 100 7200Rpm Hard Drives
in Raid Configuration
- Philips B201B 21" Monitor
- Matrox G450 32MB Graphics Card
- Maxi Sound Muse Soundcard
- 52x CD-Rom
- Internal Iomega Zip 250MB
- Microsoft® Windows 2000 Professional
- Microsoft® Intellimouse Explorer
- 104 Key Keyboard
- ATX Minitower Case
- Microlab WEP-1180 USB Powered Flat
Panel Speakers
- Intel® 10/100 Management Adaptor
- 3 Year Onsite Warranty

\$4,585

SYADE21B

Flexirent
\$42.46*

Webmaster Package
Power Advantage Graphic
Edition
Web Design Studio

\$6,219

SYADE22B

Flexirent
\$54.69*

**Desktop Publisher
Package**

- Power Advantage Graphic Edition
- Adobe Photoshop 6
- Adobe Illustrator 9
- Adobe Acrobat 4
- Adobe Pagemaker 6.5
- Quark Express 4.11

\$10,299

SYADE219

Flexirent
\$81.00*

Adelong Systems

Power Advantage Executive Edition

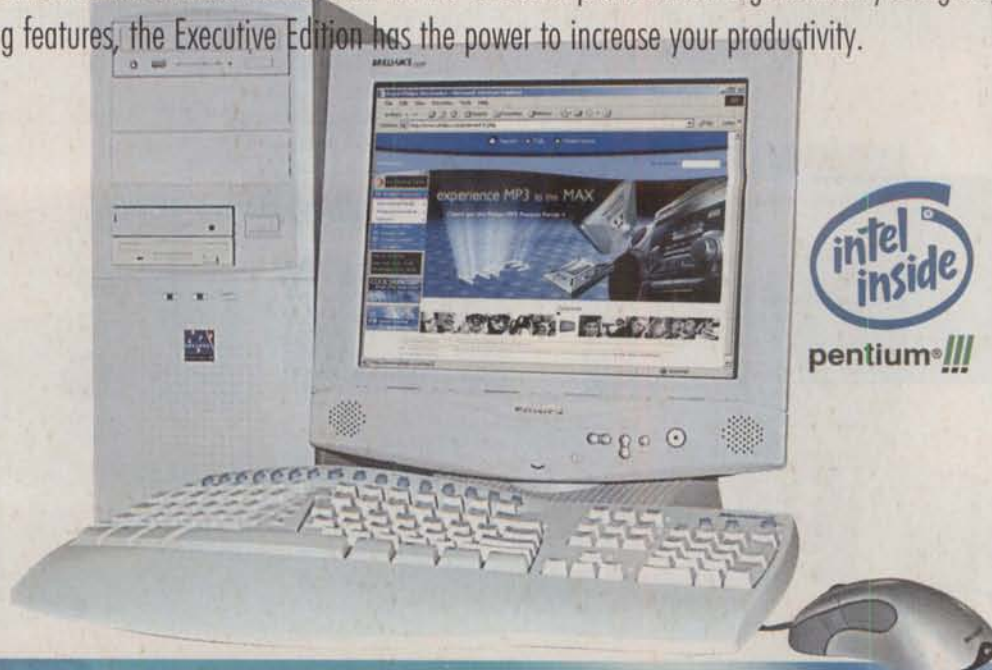
The Power Advantage Executive Edition is the ultimate workstation for the successful professional. Ergonomically designed, and with space saving features, the Executive Edition has the power to increase your productivity.

- Intel® Pentium® III Processor 1Ghz
- 256MB PC133 SDRAM
- 40GB 7,200RPM ATA100 Hard Drive
- Philips 150P Brilliance LCD Monitor
- Guillemot 3D Prophet II GTS Ultra 64MB
- Creative SoundBlaster Live Value
- 16x DVD-Rom Drive
- 1.44MB Floppy Drive
- Internal Iomega Zip 250MB
- Windows® 2000 Professional
- Microsoft® Intellimouse Explorer
- Microsoft® Natural Keyboard Pro
- ATX Minitower Case
- Intel® Pro 10/100 Management Adaptor
- 3 Years Onsite Warranty
- MS Office XP Professional

\$5,895

SYADE171

Flexirent
\$54.46*



www.adelong.com.au

6 Sales Hotline 02 8344 3190

RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE

54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE

127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:

http://www.adelong.com.au
email: info@adelong.com.au



Adelong Servers



Adelong Servers



Intel® Pentium® III Processor 1Ghz

MSI 694D Pro Air Mainboard
256MB PC133 SDRAM
Dual 20G 7200Rpm ATA100 Hard Drives
Integrated ATA100 Raid Controller
32MB TNT 2 M64 Display
52x CD-Rom
1.44MB Floppy Drive
Red Hat Linux Professional Server
Full Tower ATX Case
Intel® 10/100 Management Adaptor

\$1,999

SYADE222

Flexirent
\$20.30*

Dual Intel® Pentium® III Processor 1Ghz

Super Micro B370D Motherboard
1GB PC133 SDRAM
Dual 18GB Ultra160 10000RPM Hard Drives
Adaptec 2100S Raid Controller
32MB TNT 2 M64 Display
52x CD-Rom
1.44MB Floppy Drive
Windows® 2000 Terminal Server with 5 User Licence
19" 4U Rack Mount Computer Case
Intel® 10/100 Management Adaptor

\$11,299

SYADE224

Flexirent
\$88.84*

Dual Intel Pentium III Processor 1Ghz

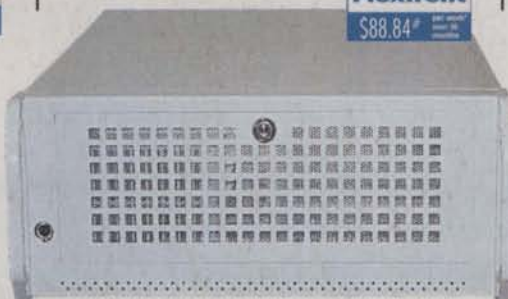
Super Micro B370D Motherboard
512MB PC-133 SDRAM
18GB Ultra160 10000rpm Hard Drive
32MB TNT2 M64 Display Card
52x CD-Rom
1.44MB Floppy Drive
Intel 10/100 Management Adaptor
Windows 2000 Server with 5 User Licence
19" 4U Rackmount Case

\$6699

SYADE223

Flexirent
\$58.84*

Visit our
exciting
website
for
latest
prices &
products



**3 YEAR
on site
WARRANTY**
(Conditions Apply)

APC

UPS



Before power problems
shoot holes in your system,
take a look at APC to find
proven reliability...

Industry standard reliable & affordable backup power solution

Back-UPS - Best Value power protection for your PC

- Compact Design
- Protect your PC, Monitor, Laser printer with 1 device
- Full-time EMI/RFI filters for noise filtration
- Lightning and surge suppression to protect your hardware
- Support for up to 4 Devices

Back-UPS 500VA	\$239	PSAPC000
Back-UPS 300VA	\$169	PSAPC008
Back-UPS 650VA	\$299	PSAPC009

Smart-UPS - Power Management for advanced networks

- Full-time Surge Suppression and Noise Isolation
- User replaceable, hot swappable batteries
- Software configurable features, data logging on 1000/700 model
- Site-wiring fault indicator

Smart-UPS 420VA	\$405	PSAPC010
Smart-UPS 620VA	\$545	PSAPC011
Smart-UPS 700VA	\$725	PSAPC003
Smart-UPS 1000VA	\$1049	PSAPC004

The world's most reliable
power-protection*

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

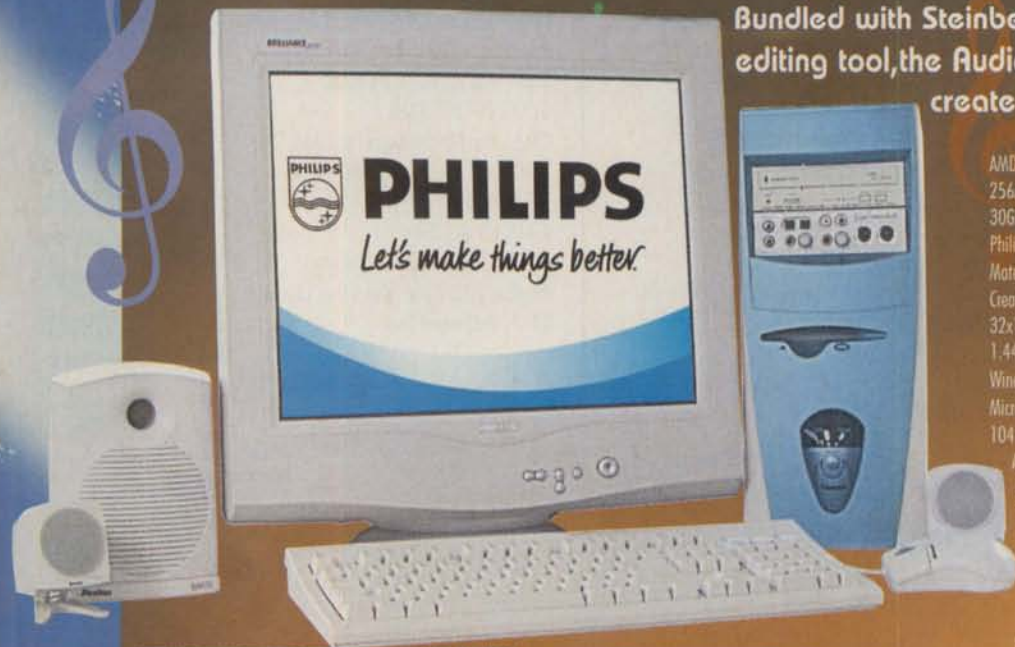


www.adelong.com.au

Advantage Pro Audio Edition

The Power Advantage Audio Edition allows you to arrange, compose and edit audio tracks.

Bundled with Steinberg Cubase, the premier audio editing tool, the Audio Edition is specifically designed to create professional results.



AMD ATHLON CPU 1Ghz
256MB PC133 SDRAM
30GB ATA100 7200RPM Hard Drive
Philips B201B 21" Monitor
Matrox G450 dualhead 32MB
Creative SoundBlaster Live Platinum 5.1
32x12x8x CD-RW Drive
1.44MB Floppy Drive
Windows Millennium Edition
Microsoft Intellimouse
104 Key Keyboard
Adelong 6013 ATX Tower Case
Boston Acoustics BA635 Speakers
56K Internal Modem
Steinberg Cubase 5 VST

Athlon 1Ghz
512MB PC133 SDRAM
30GB ATA100 7200RPM Hard Drive
18GB Ultra160 10000RPM Hard Drive
Adaptec 29160 SCSI Card
Philips B201B 21" Monitor
Matrox G450 dualhead 32MB
EGO-SYS Waveterminal 2496 Soundcard
32x12x8x CD-RW Drive
1.44MB Floppy Drive
Windows Millennium Edition
Microsoft Intellimouse
104 Key Keyboard
Adelong 6013 ATX Tower Case
56K Internal Modem
Steinberg Cubase 5 VST 32

\$5,175

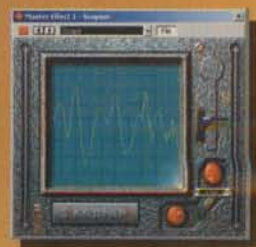
SWADE20A

Flexirent
\$47.76*

\$8,249

SWADE20Z

Flexirent
\$68.53*



**3 Year
Onsite
Warranty***

Sound

Midex 8 USB MIDI Interface



Midex 8 is the latest innovation in MIDI interface technology from Steinberg featuring 8 independent MIDI in- and outputs in a slick 1-unit case. 8 separate MIDI in- and outputs, 128 independent MIDI channels. Easy plug & play USB interface, no external power supply necessary when used in standard USB mode. Additional MIDI Thru feature and MIDI cable checker. Supports LTB - computer independent - sub-millisecond timing accuracy. Numbered MIDI port LEDs for activity monitoring. Supplied with USB cable and rack-mounting kit.

\$1,179

MMST000

EGO-Sys Waveterminal 2496 SoundCard

The Waveterminal 2496 features balanced inputs/outputs, 24-bit AD/DA converter and full duplex recording and playback to ensure professional results.

- High quality 24 Bit/96kHz D/A converters; 110dB Dynamic range and 128 x oversampling
- Signal-to-Noise Ratio (D/A), 110dB
- Analog 2 Inputs and 2 Outputs; +4 dBu Balanced/Unbalanced 1/4" phone jack
- 4 Channel Recording and 4 Channel playback (2 Ch. Analog/2 Ch. Digital) at the Same time



\$825

MMEG00000

Satellite Pro 4330XCDT

- Intel Celeron 650MHz
- 10Gb Hard Drive
- Integrated CD Rom
- 64Mb Ram
- Internal Fax Modem
- 14.1" TFT Screen
- Windows 98SE



\$3,199

NBT05089

Flexirent
\$31.36*

Satellite Pro 1730XCDT

- Celeron 650MHz processor
- 64MB SDRAM (To 192MB)
- 13.3" colour TFT display
- ATI Mobility with 4MB VRAM
- 16-bit Crystal CS4281
- 10GB Hard Drive
- 24X CD-ROM
- 3.5" Floppy Disk Drive
- 56K V.90 modem
- Microsoft Windows Millennium Edition



\$2,529

NBT05091

Flexirent
\$24.92*

Tecra 8200 Speed Step

- Pentium III 1GHz processor
- 256MB SDRAM (To 512MB)
- 14.1" colour TFT display
- Trident XP graphics controller with 16MB external VRAM
- Yamaha YMF754 PCI bus sound chip
- 20GB Hard Drive
- SelectBay DVD(read only)/CD-RW(read/write) drive
- V.90 56K modem
- 10/100TX Ethernet
- Microsoft Windows 98 Second Edition



\$9,769

NBT05092

Flexirent
\$81.23*

Visit our
exciting
website
for
latest
prices &
products

IBM i-Series Pentium III 700

- Mobile Pentium III 700MHz processor
- 64MB SDRAM (To 192MB)
- 13.3" TFT
- SMI LynxEM+ with 4MB Video RAM
- 20GB Hard Drive
- 8X DVD-ROM
- 56K V.90 modem
- 16-bit AC-97 audio
- Windows Millennium Edition



\$4,169

NB18M039

Flexirent
\$39.46*

IBM i-Series Celeron 600

- Mobile Celeron 600MHz processor
- 64MB SDRAM (To 192MB)
- 12.1" TFT display
- SMI LynxEM+ with 2MB Video RAM
- 10GB Hard Drive
- 24X CD-ROM
- 56K V.90 modem
- 16-bit AC-97 audio
- Windows Millennium Edition



\$2,949

NB18M040

Flexirent
\$29.07*

Compaq Presario 1200

- 13.3" TFT LCD Screen
- Pentium III 750MHz
- 64MB SDRAM
- 8MB VIA Trident Cyberblade
- 10GB Hard Drive
- 24X CD ROM
- 56K modem
- Windows ME



\$3,459

NBCOM033

Flexirent
\$34.15*

Compaq Presario 1400

- Pentium III 800MHz
- 8MB VIA Trident Cyberblade
- 10GB Hard Drive
- 24X CD ROM
- 56K modem
- 10/100 integ NIC
- Windows ME



\$4,285

NBCOM034

Flexirent
\$40.61*

Compaq Presario 1700

- Intel Pentium III 800MHz
- 20.0GB
- 128MB SDRAM
- 14.1" TFT XGA
- 6X DVD
- ATI Mobility M1 8MB Display Card
- 56K modem
- 10/100 integ NIC
- Windows ME



\$4,949

NBCOM035

Flexirent
\$45.69*

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



Adelong Upgrade Bundles

Upgrade your old system with an Adelong Upgrade Bundle

From basic users wishing to prolong the life of their PC, to power hungry gamers and multimedia enthusiasts, Adelong Computers have an upgrade bundle to suit. Choose from over 20 upgrade bundles online, from a simple overhaul to suit your needs. Alternatively you can call or email our sales staff for a quotation on the upgrade bundle that you need. All upgrade bundles include both a power supply and CPU fan and are shipped unassembled. Pre-assembly is available upon request.

AMD Desktop Upgrade Bundles

Gigabyte GA-7ZX Motherboard
128MB PC-133 SDRAM
Adelong ATX Tower Case

AMD Duron 800Mhz	\$505	SPADE152
AMD Duron 850Mhz	\$509	SPADE153
AMD Duron 900Mhz	\$555	SPADE154
AMD Athlon 1Ghz	\$689	SPADE155

AMD Duron 850Mhz MSI 6378 Motherboard Adelong ATX Case	\$355 SPADE168
--	--------------------------

Gamer Upgrade Bundles

MSI K7 Master Motherboard
128MB DDR Ram
3D Prophet 4500 64MB Display Card
Adelong 6000P ATX Tower Case

AMD Duron 900Mhz	\$1,195	SPADE160
AMD Athlon 1Ghz	\$1,329	SPADE161
AMD Athlon 1.1Ghz	\$1,355	SPADE162
AMD Athlon 1.2Ghz	\$1,379	SPADE163

Intel Desktop Upgrade Bundles

Gigabyte GA-6VXC7 Motherboard
128MB PC-133 SDRAM
Adelong ATX Tower Case

Intel Celeron 733Mhz	\$469	SPADE156
Intel Celeron 766Mhz	\$479	SPADE157
Intel Celeron 800Mhz	\$515	SPADE158
Intel Pentium III 866Mhz	\$679	SPADE159

Power Upgrade Bundles

MSI 815EP Pro-R Motherboard
256MB PC-133 SDRAM
Adelong 6013 ATX Tower Case

Intel Celeron 800Mhz	\$705	SPADE164
Intel Celeron 850Mhz	\$829	SPADE165
Intel Pentium III 933Mhz	\$949	SPADE166
Intel Pentium III 1Ghz	\$1,035	SPADE167



*Prices and specifications subject to change without notice

Adelong Upgrade Solutions



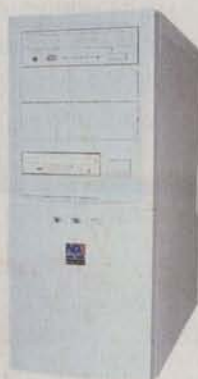
Adelong Upgrade Solutions

Upgrade your PC easily and quickly with an Adelong Upgrade Solution. Each package is completely assembled with Windows pre-installed for hassle free upgrading.

AMD Desktop Upgrade Solutions

128MB PC-133 SDRAM
20GB ATA-100 Hard Drive
32MB TNT2 M64 Display Card
Creative SoundBlaster Live Value Soundcard
52x CD-Rom
1.44MB Floppy Drive
ATX Minitower Case
Windows Millenium Edition
3 Year Onsite Warranty

AMD Duron 800Mhz	\$1,335	SYADE225
AMD Duron 900Mhz	\$1,385	SYADE226
AMD Athlon 1Ghz	\$1,525	SYADE227
AMD Athlon 1.1Ghz	\$1,549	SYADE228



Multimedia Upgrade Solutions

256MB PC-133 SDRAM
30GB ATA-100 Hard Drive
32MB GeForce II MX Display Card
Creative SoundBlaster Live Platinum 5.1 Soundcard
16x DVD-Rom
1.44MB Floppy Drive
Adelong 6000P ATX Minitower Case
Windows Millenium Edition
3 Year Onsite Warranty

AMD Athlon 1Ghz	\$2,239	SYADE229
AMD Athlon 1.1Ghz	\$2,265	SYADE230
AMD Athlon 1.2Ghz	\$2,289	SYADE231
AMD Athlon 1.3Ghz	\$2,339	SYADE232



Visit our
exciting
website
for
latest
prices &
products

Intel Desktop Upgrade Solutions

128MB PC-133 SDRAM
20GB ATA-100 Hard Drive
32MB TNT2 M64 Display Card
Creative SoundBlaster Live Value Soundcard
52x CD-Rom
1.44MB Floppy Drive
ATX Minitower Case
Windows Millenium Edition
3 Year Onsite Warranty

Intel Celeron 733Mhz	\$1,329	SYADE233
Intel Celeron 800Mhz	\$1,375	SYADE234
Intel Pentium III 933Mhz	\$1,629	SYADE235
Intel Pentium III 1Ghz	\$1,715	SYADE236



Gamer Upgrade Solutions

128MB 800Mhz Rambus DRAM
30GB ATA-100 Hard Drive
3D Prophet II Ultra Display Card
Creative SoundBlaster Live Digital Soundcard
16x DVD-Rom
32x10x4x CD-RW Drive
1.44MB Floppy Drive
Adelong 6013 ATX Minitower Case
Windows Millenium Edition
3 Year Onsite Warranty

Intel Pentium 4 1.3Ghz	\$3,349	SYADE237
Intel Pentium 4 1.4Ghz	\$3,399	SYADE238
Intel Pentium 4 1.5Ghz	\$3,565	SYADE239
Intel Pentium 4 1.7Ghz	\$3,795	SYADE240



www.adelong.com.au

*Prices and specifications subject to change without notice

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



Thin Client Terminal Server

NCD

NCD ThinSTAR™

The Most Reliable Hardware



The NCD ThinSTAR 232 Windows-based terminal delivers easy-to-manage network access to Windows applications with the performance and quality you come to expect of NCD at a value price point ideal for task-based user deployments. The NCD ThinSTAR 232 provides powerful centralized management, desktop functional enhancements and access to virtually any legacy host.

- Highly manageable, leveraging Intel Wired for Management design criteria (Wake-on-LAN)
- Lowest cost-of-ownership desktop for accessing Windows applications
- 8 MB Flash, 32 MB RAM
- High-speed Ethernet connectivity (10/100BaseT)
- Supports 64k colors
- Flexible support for both Microsoft Remote Desktop Protocol (RDP) and Citrix
- Independent Computing Architecture (ICA)

\$1,375
SYNDC000



**Introductory
WBT Five
packs with
FREE Software
& FREE
Support!**

**Contact our Corporate sale
team for more information
Tel 02 8344 3188**

**E-mail
corporate@adelong.com.au**

Visit our
exciting
website
for
latest
prices &
products

SCSI Cards

SCSI CARD 39160

The Adaptec SCSI Card 39160 delivers all-out performance for high-end servers. Combining a 64-bit PCI interface with two Ultra160 SCSI channels, the Adaptec SCSI Card 39160 supports up to 30 devices, making it ideal for connecting external drive arrays and mirroring and striping SCSI hard disk drives.



\$919
CCADA004

SCSI CARD 19160

The Adaptec SCSI Card 19160 is the top performance/value choice for desktop users. It delivers Ultra160 SCSI technology at an affordable price. This card offers the best connectivity for internal hard drives, internal and external desktop peripherals.



\$599
CCADA006

SLIM CARD 1480

Connect with SlimSCSI 1480 and dramatically improve system I/O performance. Enjoy the same fast performance and multitasking you'd get on a desktop PC--plus the convenience of instant plug-in connections and hot-swaps.



\$429
CCADA018

2906 PCI CARD FOR DESKTOP PCs

Connect up to 7 SCSI devices and gain great performance by moving to SCSI with the Adaptec 2906. Run your ZIP drive or Scanner up to 6 times faster than with a parallel port connection. Adaptec EZ-SCSI



Software is included to help you manage your peripherals.

\$139
CCENW021

ADAPTEC 29160 SCSI CARD

The Adaptec 29160 SCSI Card is tailored to the needs of small multi-user work group servers and powerful workstation users. This PCI card gets the most out of high-performance Ultra160 SCSI internal hard drives and the widest selection of popular external SCSI devices.



29160N 32 Bit PCI
\$759 CCADA002
29160 64 Bit PCI
\$799 CCADA003

2100S SCSI RAID CONTROLLER

The Adaptec SCSI RAID 2100S card delivers high performance and availability for entry-level servers - conventional and 1U/2U rack-mount - and workstations. It offers an affordable, full-featured, half-sized, micro-processor-based Ultra160



SCSI RAID solution for uses that require greater uptime, high-speed throughput, scalability, and space saving features.

\$1,139 CCADA027

HardDrives

Seagate 10K-RPM Cheetah 18XL, 36XL and 73LP Ultra160 SCSI drives push the performance envelope.

Cheetah 18XL 9GB Ultra160
Cheetah 18XL 18GB Ultra160
Cheetah 36XL 36GB Ultra160
Cheetah 73LP 73GB Ultra160

\$569 HDSGT059
\$639 HDSGT060
\$1,175 HDSGT061
\$2,275 HDSGT062



Seagate

www.adelong.com.au

Hard Drives



Seagate Barracuda III

- ◆ Ultra ATA/100
- ◆ 8.9ms Seek Time
- ◆ 7200 RPM

20GB **\$219** HDSGT047
30GB **\$269** HDSGT052
40GB **\$315** HDSGT057

Seagate U Series 5

- ◆ Ultra ATA/100
- ◆ 8.9ms Seek Time
- ◆ 5400 RPM

20GB **\$205** HDSGT054
30GB **\$245** HDSGT055
40GB **\$279** HDSGT056



Seagate

Please visit our website for up-to-date pricing on the products featured on this site.

HITACHI

Hitachi 2.5" Notebook

- ◆ ATA/5 Enhanced IDE
- ◆ 12ms Seek Time
- ◆ 4200 RPM

12B **\$279** HDHIT007
20GB **\$465** HDHIT008



HITACHI



IBM Deskstar GPX

- ◆ Ultra ATA/100
- ◆ 8.5ms Seek Time
- ◆ 7200 RPM

20GB **\$249** HDIBM046
30GB **\$275** HDIBM051
40GB **\$365** HDIBM048
60GB **\$519** HDIBM049
75GB **\$659** HDIBM050

IBM Deskstar GV

- ◆ Ultra ATA/100
- ◆ 9.5ms Seek Time
- ◆ 5400 RPM

20GB **\$209** HDIBM054
30GB **\$239** HDIBM055
40GB **\$279** HDIBM056



IBM

Memory

DDR SDRAM

- ◆ 168 Pin DIMM Module
- ◆ For use with Cyrix, AMD K6-2/3 & Athlon, Intel Pentium II/III & Celeron Processors

128MB PC2100 DDR SDRAM
256MB PC2100 DDR SDRAM

\$179 RAGEN040
\$349 RAGEN041

EDO RAM

- ◆ 32-bit Memory
- ◆ Use with 486 and older Pentium systems
- ◆ Used in Pairs in Pentium Systems

16MB EDO SIMM 72Pin
32MB EDO SIMM 72Pin



\$109 RAGEN005
\$199 RAGEN006

133Mhz SDRAM

- ◆ 133Mhz 168Pin DIMM Module
- ◆ Designed for use with Intel Pentium III Processors equipped with 133Mhz Front Side Bus
- ◆ Compatible with existing PC100 Mainboards

64MB PC133 SDRAM
128MB PC133 SDRAM
256MB PC133 SDRAM



\$39 RAGEN029
\$75 RAGEN030
\$159 RAGEN031

RAMBUS RAM

128mb 800MHZ ECC Rambus RIMM
256MB 800MHZ Rambus RIMM



\$329 RAGEN034
\$745 RAGEN037

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



www.adelong.com.au

Intel Celeron Processor

Get great performance for your personal computing and office needs with the Intel Celeron Processors. Intel Celeron processors give you quick, responsive performance for today's business applications and provide cost-effective managed client solutions for any environment.

Model

Intel 733Mhz Celeron Processor FCPGA S370
Intel 766Mhz Celeron Processor FCPGA S370
Intel 800Mhz Celeron Processor FCPGA S370
Intel 850Mhz Celeron Processor FCPGA S370



Price	Code
\$185	CPINT061
\$195	CPINT062
\$235	CPINT065
\$359	CPINT070



Intel Pentium III Processor

The new range of Intel Pentium III Processors feature 256Kb of Advanced Transfer Cache - a mechanism which matches the cache speed to the speed of the processor. Available in 100Mhz and 133Mhz front side bus speeds.

Model

Intel 866Mhz Pentium III Processor 256K ATC 133Mhz FCPGA
Intel 933Mhz Pentium III Processor 256K ATC 133Mhz FCPGA
Intel 1Ghz Pentium III Processor 256K ATC 133Mhz FCPGA



Price	Code
\$405	CPINT056
\$485	CPINT059
\$565	CPINT063



Intel Pentium 4 Processor

The Intel Pentium 4 processor maximizes the performance of cutting-edge technologies such as digital video and online gaming, and has an innovative design capable of taking full advantage of emerging Web technologies.

Model

Pentium 4 Processor 1.3Ghz with SSE2 and MMX
Pentium 4 Processor 1.4Ghz with SSE2 and MMX
Pentium 4 Processor 1.5Ghz with SSE2 and MMX
Pentium 4 Processor 1.7Ghz with SSE2 and MMX



Price	Code
\$679	CPINT068
\$729	CPINT066
\$889	CPINT067
\$1109	CPINT069



AMD Athlon Processor

This is the world's most powerful engine for x86 computing, as well as industry's first seventh-generation x86 microarchitecture. It is designed to power the next generation in x86 platforms. Professionals working with image processing, CAD and digital content creation will benefit from the superior processing power of the Athlon Processor. Computing enthusiasts who want the highest performance to run the latest 3D games and multimedia will demand desktop powered by the Athlon Processor.

Model

AMD Athlon™ Processors 1Gz with 3DNow!™ Technology
AMD Athlon™ Processors 1.1Gz with 3DNow!™ Technology
AMD Athlon™ Processors 1.2Gz with 3DNow!™ Technology
AMD Athlon™ Processors 1.3Gz with 3DNow!™ Technology

AMD Athlon™ Processors 1.2Gz Processor 266 Mhz
AMD Athlon™ Processors 1.33Gz Processor 266 Mhz



Price	Code
\$325	CPAMD039
\$349	CPAMD043
\$369	CPAMD044
\$419	CPAMD053
\$375	CPAMD050
\$419	CPAMD051



AMD DURON Processor

Employing all the benefits of its innovative design, the AMD Duron processor meets the requirements of today's most demanding value-conscious buyers without compromising their budget. With a sophisticated cache architecture, high speed system bus and superscalar floating point unit, the AMD Duron offers a 25% increase in performance over its competitors. Please refer to our web page for the latest information on the AMD Duron processor and available platforms.

Model

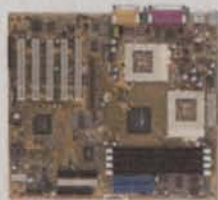
AMD Duron™ Processor 800Mhz with 3DNow™ Technology
AMD Duron™ Processor 850Mhz with 3DNow™ Technology
AMD Duron™ Processor 900Mhz with 3DNow™ Technology



Price	Code
\$139	CPAMD046
\$145	CPAMD047
\$185	CPAMD052



MSI 694D Master-S



- Dual Intel Pentium III (FC-PGA) Processors
- VIA 694DP & VT82C686B chipset
- 4x 168-pin DIMM to 2GB
- 1x AGP, 1x CNR, 5x PCI slots
- Bus Master and Ultra DMA 33/66/100
- Onboard Ultra 160 SCSI Adaptec AIC-7899 Connector
- 2 Serial, 1 Parallel, 4 USB ports

\$669 MBMSI001

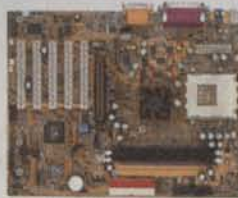
MSI K7 Master



- Socket A for AMD(R) AthlonT / DuronT 600~1GHz
- AMD(R) 761 chipset / VT82C686B
- 133MHz FSB(266MHz Internal System Bus)
- 184-pin DDR-DIMM x4, maximum 4GB
- AGP x1, CNR x1, PCI x5
- On-Board IDE Ultra DMA 33 / 66 / 100

\$345 MBMSI008

Gigabyte GA-7DX



- Socket A for AMD Athlon/Duron200/266MHz FSB processors
- AMD-761 & VIA 686B Chipsets.
- AC97 codec + Creative CT5880 sound
- 2 DDR DIMMs to 2GB of PC2100/PC1600 SDRAM
- 1 x AGP, 5 x PCI, 1 x AMR slots.
- UDMA ATA 100/66 IDE

\$399 MBGIG046

Gigabyte GA-7DXC



- Socket A for AMD Athlon/Duron 200MHz processors
- AMD-761 & VIA 686B Chipsets
- AC97 codec + Creative CT5880 sound chip
- 2 DDR DIMMs to 2GB of PC1600 SDRAM
- 1 x AGP, 5 x PCI 1 x AMR slots
- UDMA ATA 100/66 IDE ports

\$309 MBGIG047

MSI K7T Pro 2A



- VIA KT133 chipset
- Socket A for AMD Athlon /Duron processor and supports 600MHz ~ 1.2GHz or higher
- 3 x DIMM to 1.5GB SDRAM
- 2 x IDE Controllers Supporting UDMA 33/66/100
- 1 AGP, 1 CNR, 6 PCI Expansion slots
- 2 serial ports; 1 parallel port; 4 USB ports; 1 IrDA, 1 Audio/Game port

\$235 MBMSI004

MSI K7T Turbo-R



- Socket A for AMD Athlon/Duron processor 600MHz~1.5GHz or higher.
- VIA KT133A & VT82C686B chipsets.
- Three DIMMs to 1.5GB PC100/PC133 SDRAM.
- 1 x AGP, 1 CNR, 6 PCI Bus slots
- Ultra DMA33/66/100 EIDE
- Promise IDE RAID On-Board
- AC97 Audio

\$295 MBMSI006

Gigabyte GA-8TX



- Intel 850 Chipset
- PGA 423 socket for Intel® Pentium® 4 processor
- 400MHz Front Side Bus
- 4 RIMMs up to 2GB PC800 RDRAM
- Creative CT5880 PCI sound
- DMA ATA 100/66/33 IDE device
- 1 x AGP Pro, 1 x CNR, 5 x PCI slots

\$479 MBGIG043

Gigabyte GA-6VXDC7



- VIA Apollo Pro Family AGPset
- Dual Socket 370 for Intel® FC-PGA Pentium® III and other compatible processors
- 4 x DIMM to 1.5GB SDRAM
- 1 x AGP, 5 x PCI, 1 x ISA slot
- 2 x Ultra DMA 33/66 bus master IDE

\$229 MBGIG039

MSI 815EP Pro-R



- Socket 370 for Intel Pentium III (FC-PGA)/Celeron Processor
- Intel 815EP & Intel ICH2 chipsets.
- Four DIMM sockets to 2.0GB SDRAM.
- One CNR, One AGP, Six PCI slots.
- 2 x ATA66/100 EIDE + 2 x ATA100 IDE Raid Controllers.
- Integrated 4 Channel ICH2 Audio chip.

\$279 MBMSI007

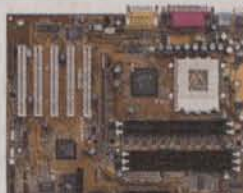
ABIT VP6



- Supports Pentium® III FC-PGA 370 processor
- VIA chipset (VT82C694X and VT82C686B)
- IDE Ultra DMA 100 with RAID (0, 1, 0 + 1)
- Four 168-pin DIMM SDRAM sockets
- 2x PS/2, 1x Parallel Port (EPP/ECP), 2x Serial Ports
- 2x USB Connectors
- 1 AGP slot, 5 PCI slots

\$239 MBABI011

ASUS A7A266



- Socket A AMD processors to 1.2+ GHz
- Ali M1647 North and Ali M1535D + South Bridge
- 266 MHz Front Side Bus
- 2 PC1600/PC2100 DDR SDRAM Slots
- 3 PC133 SDRAM Slots
- CMI-8738 PCI 4-channel audio chip
- AGP Pro slot with AGP 4X/2X/1X support
- 5 PCI slots, 6 USB ports, 2 Serial & 1 Parallel ports
- ATA-33/66/100 IDE Controller

\$385 MBASU014

ASUS A7V133



- Supports AMD Athlon/Duron 550MHz ~ 1GHz CPU.
- 3 x DIMM to 1.5GB SDRAM.
- Ultra DMA/100 and DMA/66 support
- 1 x AGP, 4 x PCI and 1 x PCI/AMR
- 266/200MHz Front Side Bus

\$295 MBASU012

www.adelong.com.au

Visit our
exciting
website
for
latest
prices &
products

Video/Sound Card

Guillemot

3D PROPHET 4500 64 MB

Hercules introduces the 3D Prophet 4500, a new graphics card based on STMicroelectronics's Kyro 2 chipset. With a revolutionary new approach to 3D rendering using Tile Architecture and 64MB, the 3D Prophet 4500 promises impressive image quality and amazing speed.

Visit our
exciting
website
for
latest
prices &
products



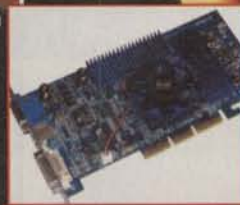
\$449
DOGU013

Optimised use of the RAM bandwidth
Higher fill rate
Strong 3D acceleration in high-textured scenes
Kyro 2 - 4500 Graphics processor
64MB SDR RAM
128-bit Memory Interface

3D PROPHET III

3D Prophet III is your state of the art fraggging device, adaptable to future visual enhancements in 3D games and blazingly fast.

Hercules



\$999
DOGU014

NVIDIA's GeForce3 and nFinite-FXT engine to produce incredible realism. The most advanced GPU architecture 200MHz core clock with 64MB DDR RAM operating at 460MHz. Lightspeed Memory ArchitectureT boosts gameplay in the highest of resolutions. Incredible 800 Billion operations/sec - 57 Million transistors.

3D PROPHET 4000 XT 32MB

3D PROPHET 4000 XT 32MB

Effective, true, precise 3D graphic rendering is now available to all, thanks to the revolutionary designed 3D Prophet™ 4000XT. Powered by the Kyro chipset that uses Hidden Surface Removal to optimize the use of memory bandwidth. Textures are mapped only on visible surfaces. Optimized use of 32 MB on-board RAM. Memory clock speed of 115 MHz. 8-layer multi-texturing offers lifelike 3D environments. Internal True Color™ blends all the pixels on-chip at 32-bit color. Full Scene Anti-Aliasing (FSAA). Environmental Bump Mapping.



\$249
DOGU016

3D Prophet II GTS Ultra



- GeForce2 Ultra Processor
- 64MB DDR Ram
- 128-bit Memory Interface
- 230MHz Memory Clock (x2) operates at 460MHz
- 250MHz Core clock
- 350MHz RAMDAC
- 2 Giga Texels/second
- 31.25 million Triangles/sec
- TV-Out and DVI-Out
- 7.36GB/s Internal chipset bandwidth

\$879
DOGU010

Hercules Game Theatre XP

- The Hercules Game Theatre XP features the most powerful, convenient and easy-to-use solution ever offered to gamers.
- Breakout Box for easy installation of external components
 - Surround sound on regular headphones, 4 or 6 speakers
 - Connect joysticks, wheels and gamepads on the USB and game port
 - Hardware MP3 decoding and 3D audio effects playback



\$299
MAGUI004

Guillemot Maxi Studio ISIS XL



\$529
MAGUI001

- 2 MIDI ports
- External 20-bit converters
- 4 selectable hardware synchronization clocks
- Higher bandwidth allows enhanced multi-track recording capabilities
- Sampling memory expandable to 36 MB

Guillemot Maxi Sound Fortissimo XL

- YAMAHA audio processor.
- 2 or 4 Speaker Support.
- Optical Digital Output
- Built-in Yamaha XG synthesizer (with 2MB MIDI hardware wavetable)

\$79
MAGUI002



Adelong Home Theater Bundle

The Home Theatre experience has now become affordable for all, thanks to the Adelong Home Theatre Bundle. Featuring the Omni SL-P2000KD DVD Player and matching Microlab M-1000 Speaker System, The Adelong Home Theatre Bundle offers the advantages of high quality video coupled with true surround sound at an affordable price.

DVD Player

- Compatible with DVD, SVCD, DVCD, CVD, VCD, CD, OKO & MP3
- Dolby 5.1 Digital Surround Sound
- High Horizontal Image Definition
- Video Signal Outputs: Composite RCA, S-Video, FDDI
- One Year Warranty



HOT SPECIAL

\$499
SYADE193

Visit our
exciting
website
for
latest
prices &
products

Eyeforce Pak Wireless 3D Gaming Glasses

The Eyeforce Pak is the newest & most exciting gaming experience for the PC. The Eyeforce Pak works with most Direct 3D, Open GL & Glide PC games & supports a wide range of performance graphics cards.

Lightweight wireless infrared LC shutter glasses
High refresh rate for flicker free viewing
Supports high resolutions
Multi-user with 1 emitter
Windows 95/98 compatible



\$249 MMEEY000

MAG LT541F LCD Monitor

- Effective Display Size 15"
- XGA Resolution 1024x768 at 85Hz
- Pixel Pitch 0.297mm



\$1,295 MOMAG007

TNT2 M64 Display Card



- 128-bit Graphic Engine
- 64-bit Frame Buffer
- 32Mb Ram
- 300Mhz Ramdac
- 24-bit Z Buffer

AGP
\$105
DCGEN014

AGP TV OUT
\$125
DCPRO003

PCI TV OUT
\$149
DCPRO004

GeForce2 MX Display Card



- VIDIA 2nd Generation 256-bit GeForce2 MX GPU.
- Integrated 2ND-generation T&L engine.
- 700-Mtexels Fill Rate.
- 20M triangles/sec setup.
- Independent Full Scene Multisample Anti-aliasing.
- 32-bit color with 32-bit z/stencil.
- DirectX and S3TC texture compression

AGP
\$159
DCEAG009

AGP TV OUT
\$199
DCEAG010

Creative SoundBlaster Live Platinum 5.1



- EMU 10K1 Synthesizer Chip
- Synthesizer Type Wavetable (Scalable PCI)
- Up To 32MB RAM Based on System RAM
- 48 MIDI Channels
- Full Duplex
- 16-bit Max. Recording Depth
- 48 KHz Max. Recording Rate
- 16-bit Max. Playback Depth
- 48 KHz Max. Playback Rate
- Signal-to-Noise Ratio > 96 dB

\$439
MMCRE071

Live Value OEM
\$105
MMGUI038

\$195
MMCRE072

Creative SoundBlaster Live Player 5.1



Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



www.adelong.com.au

Visit Our

Website

For Our

Full

Range Of

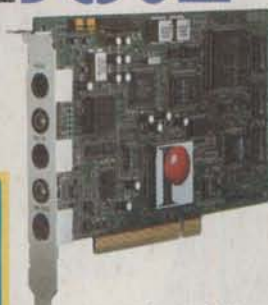
Multimedia

Expansion

Cards

www.adelong.com.au

microVIDEO DC30 PLUS

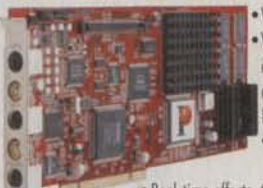


- The Pinnacle DC30Plus is designed to edit and professionally finish non-linear video.
- Constant data rate up to 7 MB per second
- Motion-JPEG compression with adjustable ratios of 2.5 : 1 (NTSC) or 3 : 1 (PAL) up to 32 : 1 at the full resolution

- Up to 30/25fps; 60/50 fields per second for NTSC/PAL
- Resolution of up to 640 x 480 (NTSC) or 768 x 576 (PAL/SECAM)
- Audio signal 0 dB, -20 dB selectable
- Includes Adobe Premier 5.1

\$1,525 MMMPIN005

microVIDEO DC1000

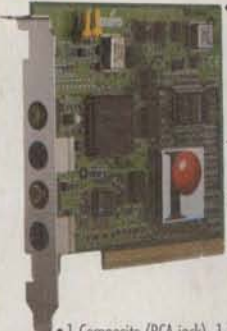


- Video Standards: PAL, NTSC
- Video resolution: 720x576 (PAL) or 720x480 (NTSC), studio quality, compatible with Betacam and DV
- Maximum bit rate: 50 Mbit/sec in dual-stream mode

- Real-time effects: titles, filters, and 200 crossfades and dissolves without software rendering
- Encoding methods: MPEG-2 IP format, 422P@ML
- Playback mode: dual stream 2 video files via one mixer
- Video overlay: real-time monitoring on computer screen.
- Production length: up to 3 hrs. Video productions larger than 2Gbytes
- Audio processor: Perfect, lip-synching audio processing in CD or DV quality
- Standard ports: S-Video (Y/C) and composite (CVBS)
- Professional, real-time-capable video processing software.

\$4895 MMMPIN006

microVIDEO STUDIO DC10 PLUS



- DC10plus is a Motion-JPEG PCI board that allows full-screen video capture at 768x576 resolution with a maximum data rate of 6 MB per second.
- Up to 25fps Video capture rate (PAL)
- Up to 768 x 576 YUV 4:2:2 Capture Resolution
- Motion-JPEG compression ratio selectable from 3.5:1 up to 43:1 at full resolution

- 1 Composite (RCA jack), 1 S-Video, PAL/NTSC/SECAM Inputs
- 1 Composite (RCA jack), 1 S-Video, PAL/NTSC Outputs

\$585 MMMPIN004

AverTV Studio

Enhanced DIGITAL VCR Function with new TIME SHIFT and I-RECORD

Time Shift: Pause live TV, come back and replay.

I-Record: Save your favorite show, then Instant Replay any part of the recorded file while recording.

Remote Control & Remote Mouse in One

16 Channel Preview on your PC screen

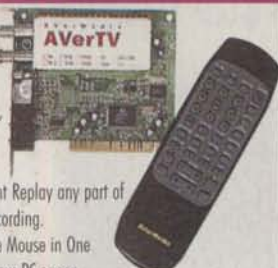
Fully Resizable TV Window up to full screen

AutoScan television channels and radio stations

Image/Video Capture at up to 728 x 526 (PAL) resolution

Music CD Button turns on the CD Player

Compatible with Windows 95/98/ME/NT/2000



\$159

MMAME000

Video Grabber



\$129

MMAME001

USB Interface
NTSC/PAL Video Input
Portable Motion Picture & Still Image Capture At Your Fingertips
Composit and S-video input with Video throughput

Capture up to 30 fps @ 320x240
Supported Resolutions 160x120 ; 176x144 ; 320x240 ; 352x288 ; 640x480 (snapshot only)
Snapshot Button
Compatible with Windows 98

TV Explorer



USB TV Tuner/Video Capture
Requires no External power
151 channels, FM Radio, Stereo Sound
Image capture up to 640 x 480
Plug & Play installation

\$225

MMAME002

Vcam CU-68R

USB Interface

CMOS sensor, 100k pixels

Max. Resolution: 352(h) x 288(V)

Frame Rate: 30fps @ 160 x 120

Operating system: Windows 98 / 2000 / ME

Power provided By USB Port

New



\$89

MMAME003

Vcam CF-2000 FireWire Camera/Card

PC Interface: IEEE-1394

SONY Progressive Color CCD sensor with 350k Pixels

Max. Resolution: 640(h) x 480(v)

Frame Rate: 30fps @ 640 x 480

Operating system: Windows 98 / 2000, MAC 8.6 & 9.0

Colour: 16.8 million True Colour (24bits)

Auto light-detection, Flicker-free capturing



\$345

MMAME004

Chicony Digital Camera

- XGA High Resolution
- Windows 98/2000/Me Compatible
- Advance Colour CCD Sensor Technology
- USB & RS232 Interface
- Compact Flash Card Memory
- Self Timer Function

Application Software

- Ulead Photo Express 3.0 SE
- Ulead Photo Explorer



\$449

IOCH1000

DVD Player

Available in Black or Silver only

\$349

MMJN1001



- Dual Laser Technology
- Built in Dolby Digital AC3 Decoder
- Supports RCA, SVHS, Optic Fibre & Coaxial(audio) Output
- Karaoke function with 2 mic inputs & Echo control
- PAL/NTSC Compatible with Multi Zone support
- Compatible with DVD/VCD/CD-R/CD-RW/MP3 Disks

Please visit www.adelong.com.au for our full range of DV CamCorders

SwannFire CardBus

Now Notebook owners can take advantage of the speed and convenience of FireWire transfer rates. The SwannFire CardBus is a full function 1394 solution for Notebooks.

- 400 Mbps max transfer rate (50 MB/sec)
- Max 63 devices, 4 pin and 6 pin computer and consumer device connections
- Supports real-time-critical applications such as video
- TI (Texas Instrument) Chipset
- OS 9.0 (recommended), or Windows 98SE/2000/ME
- 3 Port PHY layer connector and interface
- Asynchronous data transfers is supported
- Supports non real-time-critical applications like printers, scanners.



\$169 CCSWA002

Swann Firewire



Simply plug this PCI card into your windows 98 computer for instant firewire capability. This card gives you 3 Firewire ports at a full 400Mbps. This card allows you to connect up the latest DV cameras and new high speed firewire hard drives. All of this for cheaper than you can get the latest in SCSI technology.

\$139 CCSWA000

VideoWorks Pro



A full Digital Video editing package. Includes: Swann PCI PnP Firewire card, headset inc. mic, IEEE1394 A/V Cable, over \$490 worth of software: Main Actor video editing suite, Swann Video Works, U-Lead Video StudioV4.0, Kais Power Goo, Kais Soap 2.

\$195 CCSWA001

Swann InfraLink

Expand the functionality of your PC and mobile phone. Customise and edit your phone's logos and ringtones for that personal touch, or conveniently organise your calendar on your PC and upload to your mobile!

Infrared standard support: IrDA standards compliant Maximum infrared connection speed: 115.2K (SIR) Connect to COM port, - external power source not req.

Suitable for:

- Nokia 6150/6110/6138
- Nokia 8210 - Nokia 8850/8890
- Nokia 7110 - Nokia 6210
- Siemens S25/S2588
- Siemens S35i
- Siemens 3568i
- Ericsson R320s
- Motorola Timeport
- Motorola L series (L2000)

\$69 CCSWA003



SwannSmart II 56K



External

Simplicity and stability are what made this modem win a 'best buy' award against 17 leading-brand modems tested. The Swann Smart II 56K External Modem's clever upright design, not only takes up less desk space, but defies heat, the enemy of all modems. Perfect for the family and new computer user and those new to the internet.

\$175 FMSWA007

Swann Speed Demon



External

The Swann SpeedDemon 56K External Modem offers speed and reliability, with voice/fax/data capabilities and great value for money.

\$95 FMSWA004

SwannSmart USB Modem



The SwannSmart USB V.90 modem is bus powered, so there's no need for extra power supply cables. Smooth, sleek styling and cool colours ensure the SwannSmart USB modem complements any PC. The compact design fits easily on the smallest desktop. Not much bigger than your mouse, the SwannSmart USB modem travels well with your Notebook or Laptop.

\$99 FWSWA010

SwannSmart PC Card II



Surf the Web, send and receive e-mails and faxes with the SwannSmart II PC Card. Excellent for international business communication. Complies with international modem standards. Fax and data compatible. Simple to install and easy to use.

5 year guarantee

\$155 FWSWA009

www.adelong.com.au

Visit our exciting website for latest prices & products

Please visit www.adelong.com.au for our full range of DV CamCorders

Sales Staff are Available (est)

9am-6pm Monday to Friday,

10am-4pm Saturday

Technical Support

(5 Days a week 9am-5.30pm)

Phone (02) 8344 3160

Sales Hotline 02 8344 3190



Speakers

Visit our
exciting
website
for
latest
prices &
products

Microlab

Microlab M-B55 USB Speakers

- 2 Watt RMS Power Output
- 100Hz-18KHz Frequency Response
- 105mV Sensitivity



\$19 MMMIC005

Microlab M-400P Speakers

Designed to be as unobtrusive as possible, the Microlab M-400P Flat Panel Satellites can be wall mounted and can be fitted with photographs while maintaining audio quality.

- 36 Watt RMS
- 35Hz - 18KHz Frequency Response
- Flat speaker satellites
- 4" woofer driver



\$95 MMMIC001

Microlab M-500 Speakers

- 480 Watt PMPO Power Output
- 4" Subwoofer Driver
- Dynamic Bass Boost, Low Distortion
- Magnetically Shielded



\$85 MMMIC006

Microlab M-1000 5.1 Audio System

- Real 5.1 Channel Output
- Compatible with AC-3, DTS, THX
- 880 Watt PMPO Power Output
- 5.25" Subwoofer Driver, 3" Satellite Drivers
- Dynamic Bass Boost, Low Distortion
- Magnetically Shielded



\$185 MMMIC004

PHILIPS

Philips A1.2 Fun Power

- 2 x 1.5 watts RMS speakers for connection to a stereo sound card, CD/cassette/MP3 player or other audio-visual sources.
- Bass Boost and Bass Reflex System.
- Magnetically Shielded.



\$29 MMPHI000

Philips A1.2 Fun Power Plus

- Active 10 watts from two 5 watt desktop speakers for connection to a stereo sound card, CD/cassette/MP3 player, etc.
- Bass boost and Bass Reflex System.
- Magnetically shielded.



\$49 MMPHI001

Philips A2.3 Speaker System

- Active High Power 32 Watts RMS 3 piece speaker system (2 x 6W speakers and 1 x 20W subwoofer).
- High Quality sound, Compact Powerful Subwoofer, High Clarity Satellite speakers
- Remote Control, Bass Boost, Magnetically shielded.



\$99 MMPHI002

CREATIVE

PCWorks Four Point Surround FPS1000

Get ready for the real 3D audio surround gaming experience with the FPS1000. With four compact amplified satellite speakers, separate subwoofer, two rear stands and the single master volume control, FPS1000 is the first complete four-channel speaker system for the PC.



\$165 MMCRE033

www.adelong.com.au

ALTEC LANSING

ALTEC LANSING ACS22 Tower Speaker

Powerful sound from a two tower system. Ideal for those consumers who need excellent PC audio output, either for teleconferencing, games or music CDs, but who do not have a requirement for a subwoofer. Excellent value for money.

- Small footprint with headphone output
- 5 Watts RMS Power
- Produces powerful audio output from two satellites



\$65 MMALTO08

ALTEC LANSING ACS45.1 PowerCube Speaker

Introducing the Altec Lansing ACS45.1 PowerCube Speakers, a three piece multimedia audio solution at an unbelievable price. Experience the enhanced output of the PowerCube satellite system. Great for games and CD's, the ACS45.1 will bring hi-fi audio to your computer desktop today.

- 12 Watts Satellite Power
- 3" full range driver
- 20 Watts RMS
- 6" subwoofer



\$195 MMALTO01

ALTEC LANSING ACS54 PowerPlay Plus Speaker

5-Piece system designed especially for the sound demands of gamers. PowerPlay Plus is the only speaker system designed especially for gamers that provide high quality, powerful surround sound game audio output. This 5-piece system provide a true multidimensional surround sound experience

- 20 Watts Satellite Power
- 20 Watts Subwoofer Power
- Unique Bracket/stands provide convenient mounting possibilities for surround speaker



\$239 MMALTO09

ALTEC LANSING ACS33 PowerCube Speaker

3-Piece system dramatically enhances PC Audio. The PowerCube Speaker system with its compact satellites delivers powerful audio playback from a 3-piece system. Active subwoofer can be set for desired bass response and the electronic controls on the satellites adjust the volume for both satellites and subwoofer simultaneously.

- 10 Watts Satellite Power
- Volume control and Power ON L.E.D
- 15 Watts Subwoofer Power



\$115 MMALTO05

ADELONG 6000PATX CASE

W: 180mm
D: 445mm
H: 420mm
Power Supply: 300W ATX

\$135 CAADE018



ADELONG 6013 ATX CASE

W: 180mm
D: 445mm
H: 420mm
Power Supply: 250W ATX

\$79 CAADE025



EXTERNAL CD-ROM CASE

IDE Paralell Case **\$139** CAADE008
SCSI I Centronics Case **\$135** CAADE007
SCSI II DB50 Case **\$145** CAADE015
SCSI III DB68 Case **\$179** CAADE016



ADELONG DELUXE MINI CASE AT

W: 180mm
D: 340mm
H: 390mm
Power Supply: 230W ATX

\$45
CAADE000



ADELONG ATX CASE AT/ATX

W: 200mm
D: 450mm
H: 410mm
Power Supply: 250W ATX

\$55
CAADE014



DELUXE AT/ATX 250 WATT DESKTOP CASE

W: 442mm
D: 473mm
H: 155mm
Power Supply: 250W ATX

\$79
CAADE012



www.adelong.com.au

Server Cases

CF-1100S Server Case

Dimensions: 415(W) x 525(H) x 550(D)mm
Drive Bays: 1x 3.5" exposed, 10 x 5.25" exposed, 5 x 3.5"HDD (Hidden)
Motherboard: Full size AT / ATX
Power Supply: HotSwap Redundant 2 x 300W ATX



\$1,345
CAADE052

CF-219 2U Rackmount Chassis



Dimensions: 430(W)x88(H)x615(D)mm
Chassis: All aluminum/Steel construction
Drive Bays: 1x5.25" exposed, 1x3.5" exposed, 6x3.5" HDD
Motherboard: Full size AT/ATX
Power Supply: ATX
Riser Card: 2 (each with 1 PCI slot)

\$615 CAADE051

CF-436 4U Rackmount Chassis



Dimensions: 430(W)x177(H)x536(D)mm
Chassis: All aluminum/Steel construction
Drive Bays: 1x3.5", 3x5.25" exposed, 5x3.5"HDD
Power Supply: ATX

\$529 CAADE050

Visit our
exciting
website
for
latest
prices &
products

Power Supplies



Description	Price	Code
200W AT POWER SUPPLY	\$39	PSGEN000
230W ATX POWER SUPPLY	\$45	PSGEN002
300W ATX POWER SUPPLY	\$55	PSGEN003
350W ATX POWER SUPPLY	\$59	PSGEN011
300W P4 ATX POWER SUPPLY	\$59	PSGEN012
300W Redundant ATX POWER SUPPLY	\$469	PSGEN014

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



Monitors/CD-Rom's/Scanners

***AUSTRALIA WIDE 3 YEAR ON SITE WARRANTY**

Mitsubishi Diamond View 1554r 15"

- 15" Monitor ideal for home users
- Dynamic Focus picture tube
- 13.9" Viewable, 0.28 dot pitch
- Max Resolution 1024 x 768 @65Hz
- Weighs 12.5kg



\$295 MOMIT021

Mitsubishi Diamond View 1770G 17"

- 17" Monitor for daily users
- High Contrast CRT
- 15.9" Viewable, 0.27mm dot pitch
- Max Resolution 1280 x 1024 @60Hz
- On Screen Display
- Weighs 17.4kg with OSD



\$419 MOMIT026

Visit our
exciting
website
for
latest
prices &
products

Mitsubishi 1995SL 19" Display

- High contrast 19" short length picture tube
- 18" viewable, 0.26mm dot pitch
- Max resolution 1600 x 1200 pixels at 75 Hz.
- On Screen Display.
- Windows® 95, 98, Me and 2000 and Apple Macintosh compatible.

New



\$749 MOMIT025

Mitsubishi Diamond View 17NF 17"

DIAMONDTRON NF
NATURAL FLAT CRT TECHNOLOGY

- 17" Natural Flat Monitor
- 16" Viewable image
- Distortion - free flat screen
- 0.25mm stripe pitch
- Max Resolution 1600x1200 @ 75Hz
- Weights 19.2kg,



\$669 MOMIT015

Mitsubishi CD-RW Drives

Diamond Data CD-RW Drives 30x6x4 / 30x8x4



- Buffer: 2MB (30x6x4)/8MB(30x8x4)

- Pack includes:
- CD-RW Drive
 - 1x CD-RW Disk
 - Easy CD Creator™
 - Director™
 - CD Copier Deluxe™
 - Audio Cable & Screw

32x12x8x **\$359** MMMIT016

32x10x4 **\$295** MMMIT014

Mitsubishi Diamond View Scanners

DV648U

DV648U
600 dpi
Flatbed
Scanner
with USB
Interface Ideal
for home and
office use. Scans
pages and photographs
quickly and easily with an
optical resolution of up to 600
x1200 dpi. The DV648U is easy
to install, thanks to its USB
interface.



DV648U **\$129** IOMIT003

DV648UT

DV648UT -
Transparency
and Film
Scanning, with
USB Interface
and 600 dpi
optical
resolution. A
added
advantage of being
able to scan positive or
negative films, slides and other
transparent objects. Film frames, a slide holder
and a 35 mm film strip holder is included.

DV648UT **\$259** IOMIT004

Model	Price	Code	Model	Price	Code
Mitsubishi DV151 15" LCD TFT Display	\$1,745	MOMIT018	Mitsubishi Voice Modems External	\$99	FMMIT002
Mitsubishi DV170 17" LCD TFT Display	\$3,349	MOMIT020	Mitsubishi Voice Modems Internal	\$49	FMMIT003
Mitsubishi DV180 18" LCD TFT Display	\$4,129	MOMIT017	Mitsubishi Diamond View Scanner DV1248VT	\$1,049	IOMIT005
Mitsubishi Diamond View 19NF 19"	\$1,129	MOMIT016	Mitsubishi 52x CD-Rom	\$75	MMMIT017
Mitsubishi Diamond View 2107 21"	\$1,745	MOMIT024	Mitsubishi 16x DVD-Rom	\$215	MMMIT008



PHILIPS

Monitors



107T 17" Real Flat Monitor

109P20 19" Real Flat Monitor

201P10 21" Real Flat Monitor



March 2001

Philips 107E
\$489
MOPHI010

\$569
MOPHI004

- For use with MAC and PC
- Flicker free display up to 1280 x 1024 @ 71 kHz
- Real Flat High Contrast CRT with 0.25 mm dot pitch
- LightFrame™ for brightest display of movie and photo windows
- XSD- Xtra Space Design™: maximum depth of only 419 mm / 16.5"

\$1,119
MOPHI005

- Autoscan Technology: up to 1920 x 1440 @ 111kHz
- Real Flat Aperture Grille CRT with 0.24mm Grille Pitch
- Worlds shortest 19" footprint at 438mm depth
- PC and Mac compatible

\$2,145
MOPHI006

- Autoscan Technology, offering up to 2048 x 1536 @ 121kHz
- Real Flat Aperture Grille CRT with 0.24mm Grille Pitch
- Worlds shortest 21" footprint at 466mm depth
- PC and Mac compatible

140S 14" LCD Monitor

150P 15" Brilliance LCD

New

\$1,299
MOPHI007

- Analog video interface with advanced one touch AUTO adjustment for full compatibility with standard video cards
- Most compact design 165mm depth with cable management
- Less than 60% foot print of comparable CRT monitors

\$1,945
MOPHI008

- 60% smaller footprint-only 165mm deep
- Dual input-Accepts both DVI Digital and VGA input
- Advanced AUTO adjustment automatically optimises picture quality
- Built-in, front-firing stereo speakers and microphone for video conferencing and multimedia applications

Now Available In Black

170B 17" LCD Monitor

150x 17" Beyond Technology

\$3,799
MOPHI009

- Dual input-accepts both DVI Digital and VGA input
- Advanced AUTO adjustment automatically optimises picture quality
- Wide viewing angle technology
- 181 mm footprint with full detachable cables

New

beyond technology.

- Ergonomically designed with both height and tilt adjustment
- Multimedia enhanced with built in speakers and microphone
- Coloured side panels that can be changed to suit your mood
- 15.1" LCD TFT Screen
- Recommended resolution of 1024 x 768
- 160 degree viewing angle
- DVI ready. A single connection and cable recognises both VGA analog and digital signals.
- height and tilt adjustments

\$1,999
MOPHI015

Let's make things better.



PHILIPS

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



CD Burner/Storage

TDK velocd **New** 16x 10x 40x 32x

TDK takes CD burner performance to the ultimate level with its **brand-new** 16/10/40 veloCD ReWriter.

ULTIMATE RIP SPEED

The 16/10/40 veloCD burner offers bit-perfect 32X digital audio extraction.

NO MORE CD COASTERS

The 16X veloCD lets you burn while running multiple applications. With BURN-Proof write assurance technology, buffer underrun errors are eliminated.

FASTEST CD REWRITING

TDK makes CD rewriting faster and more convenient with the world's first burner capable of 10X rewriting with the convenience of drag-and-drop recording.

ULTIMATE SOFTWARE SUITE

The new 16/10/40 veloCD burner comes complete with TDK's own CD Blender Software suite, as well as Nero 5.0 multimedia recording software and InCD packet writing software.

It's everything you need to organize and play your digital music files, create play-anywhere CDs from MP3, WMA and WAV files, copy CDs with one-click convenience, plus lots more.

\$679
MMTDK000



650MB Media

5 CD-R Pack In Slimline Jewel Case

\$7.45 MMTDK001

10 CD-R Pack In Protective Sleeve

\$11.65 MMTDK002

50 CD-R Pack On Spindle

\$49 MMTDK003

1 CD-RW Pack High Speed (10x) In Jewel Case

\$6.45 MMTDK004



700MB Media

10 CD-R Pack In Protective Sleeve

\$13.95 MMTDK005

1 CD-RW Pack In Jewel Case

\$3.75 MMTDK006



**4 Pack
Permanent CD-
R Marker Pens**
\$12.95
MMTDK008



DVD Media
5.2GB
Rewritable DVD
\$95
MMTDK007

Storage

Argosy USB/PC-Card Hard Drive Case

Available in either USB or Type II PC-Card, and supporting 2.5" Hard Drives up to 20GB, Argosy Hard Drive cases are the perfect solution for upgrading your notebook storage needs.

USB Interface

\$129

CAARG000

PCMCIA Type II Interface

\$129

CAARG00



Visit our
exciting
website
for
latest
prices &
products

Storage



CASTLEWOOD

Look At The Power ORB Delivers!

• SCSI, EIDE or Parallel Port versions	Internal IDE 2.2GB	\$399	BUORB000
• 3.5 hours of audio	Internal IDE OEM 2.2GB	\$369	BUORB006
• 2+ hours of video	Internal SCSI 2.2GB	\$439	BUORB002
• 2,000+ colour photographs	Internal SCSI OEM 2.2GB	\$355	BUORB007
• 22 100MB floppy disks	External SCSI 2.2GB	\$439	BUORB003
• 1500+ 1.44MB floppy disks	External USB 2.2GB	\$489	BUORB004
• 3+ CD ROM games	Disk 2.2GB	\$69	BUORB005
	Internal IDE OEM 5.7GB	\$819	BUORB008
	External IDE Firewire 5.7GB	\$1069	BUORB009
	5.7GB Disk	\$139	BUORB010

Lacie DVD-RAM Drives

The LaCie DVD-RAM drive brings rewritable DVD technology to desktop computing.



LaCie External 9.4GB Firewire DVD-Ram Drive

\$1,449 MMLAC008

LaCie External 9.4GB SCSI DVD-Ram Drive

\$1,449 MMLAC010

Lacie CD-RW Drives

LaCie external CD-RW drives offer the best in flexibility and performance with a range of connectivity.



4x4x24x USB

\$559 MMLAC000

16x10x40x SCSI

\$845 MMLAC015

8x4x32x USB/Firewire

\$639 MMLAC001

4x4x24x USB/Firewire Pocket CD-RW

\$1045 MMLAC016

16x10x40x USB/Firewire

\$909 MMLAC012

8x4x24x USB/Firewire Pocket CD-RW

\$1169 MMLAC017

12x10x32x SCSI

\$729 MMLAC014

Lacie USB/FireWire External Hard Drives

LaCie External/USB FireWire Hard Drives offer up to 14Mb/s sustained transfer rate, making them ideal for multimedia or large files.

20GB

\$539 HDLAC000

40GB

\$659 HDLAC008

60GB

\$785 HDLAC009

75GB

\$1,369 HDLAC010



Lacie USB/FireWire Pocket Hard Drives

Offering both USB and FireWire connectivity, LaCie Pocket Hard Drives offer the widest range of connectivity to today's portable computers.

10GB

\$875 HDLAC004

20GB

\$1,185 HDLAC005

30GB

\$1,499 HDLAC007



Lacie External USB Hard Drives

Increase the storage space on your portable computer, or transfer data quickly and easily between your desktop and notebook with the LaCie external USB drive.

20GB

\$499 HDLAC006

40GB

\$619 HDLAC011



LaCie TX12000

The TX12000 SCSI host-independent subsystem is the latest generation in Ultra160 SCSI Storage systems delivering significant improvements in terms of performance and reliability. LaCie's TX12000 series, which features storage solutions ranging from JBOD to SCSI RAID, is ideal for the varying demands of vertical market applications.

- 12 bay, host-independent Ultra160 LVD subsystem
- 160MB/s transfer rates
- No single point of failure
- Massive increase in data storage capacities
- Modular, expandable tower and rack configurations

LaCie TX12000 Solution - Available in Desktop or Rackmount Configuration

TX12000 12 Bay 2 Channel

\$7,245 BULAC008

TX12000 12 Bay 2 Channel with RAID

\$12,295 BULAC009

TX12000 Hard Disk Modules

18GB 10000rpm Ultra160-SCA drawer

\$1,425 BULAC012

36GB 10000rpm Ultra160-SCA drawer

\$2,135 BULAC013

73GB 10000rpm Ultra160-SCA drawer

\$3,235 BULAC014



Visit our
exciting
website
for
latest
prices &
products

New

Internet Keyboard

Includes 10 hot keys on a comfortable design that also features a detachable palm rest for added comfort. Hot Keys allow instant access to email and internet functions.



\$45

IOMST015

Natural Keyboard Pro

The new ergonomic Microsoft® Natural® Keyboard Pro features 19 "Hot Keys," which link directly to applications on your PC and the web. Plug in up to 2 USB devices directly into your keyboard.

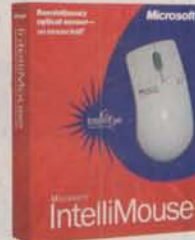


\$95

IOMST014

IntelliMouse IntelliEye

The IntelliMouse with IntelliEye gives you superior precision with its revolutionary optical sensor that scans your desktop 1,500 times a second. It also features an ergonomic design and a wheel for efficient zooming and scrolling.



\$69

IOMST013

IntelliMouse Explorer

Point and click with pinpoint accuracy-literally! The new IntelliMouse Explorer from Microsoft is so advanced, it doesn't need a mechanical ball as its been replaced with the new IntelliEye optical sensor, which provides consistent accuracy and control on virtually any surface.



\$79

IOMST012

Cordless Wheel Mouse

Fast scrolling with cordless freedom. A comfortable, rounded shape provides easy control for right and left hands. Logitech's innovative wheel design provides both a true scroll wheel and the extra convenience of a third mouse button.



\$79

IOLOG026

Cordless MouseMan Wheel

The Cordless MouseMan® Wheel combines cordless freedom of movement with a sleek, comfortable shape that offers unique soft-touch sides. Logitech's advanced digital radio technology eliminates the struggle with cords.



\$95

IOLOG028

Cordless Freedom Navigator

With convenient Internet and multimedia control, access the Internet; visit Web pages; open e-mail; search; play CD/DVD's and Windows™ media files, adjust volume, and more with one touch of a key.



\$195

IOLOG033

Cordless Desktop Pro

Comfortable rounded mouse provides precise control for left and right hands. With convenient iTouch™ Internet and multimedia control. Includes the batteries that power the keyboard and mouse for up to a year.



\$215

IOLOG029

Wireless Keyboard with onboard Mouse



Onboard Mouse Pointing Device.
4 mouse buttons with two scroll buttons for Internet, Web TV.
106 Keys soft touch Keyboard.
Operation Distance: Line of sight 14 metres. 145 degrees 1 metre.
Battery Life: 130 hours of continuous use

\$99

IOAME000

Logitech Cordless Mouseman Optical

Cordless AND optical in a comfortable design. No cord to clutter your desk and no mouse ball to clean. Includes a convenient thumb button, scroll wheel for quick scrolling and WebWheel™ software for fast, easy Internet access.

\$139

IOLOG0365



THRUSTMASTER

Gaming

Ferrari 360 Modena

The officially Ferrari® licensed 360 Modena® replica racing wheel is equipped with comfortable rubber textured handgrips and authentic F1 gearshift levers as well as dual acceleration and braking systems with either progressive wheel mounted levers or stable foot pedals. An easy to clamp central fixation system provides gamers with maximum stability for hours of virtual race track fun and excitement.



Ferrari Force Feedback Racing Wheel

\$205

IOGU1007

\$85

IOGU1004

Top Gun Fox 2

The Top Gun™ Fox™ 2 Joystick is both ergonomic and highly realistic. This innovative, high-quality stick includes a sliding thumb throttle, realistic masked Fox 2 button, 2 quick-action buttons and rubber-textured grip.



\$39

IOGU1005

Top Gun Afterburner

The Top Gun™ AfterBurner™ Joystick brings full-flight excitement to your gaming. Features a full-sized detachable throttle, 2 powerful motors and up to 60 programmable functions. For use with PC and iMac™



\$105

IOGU1008

D-Link DES-1016R

16 Port Switch for Workgroups

Built with advanced functions, these switches are designed for the workgroups with advanced requirements. Powerful yet easy to use, they allow users to simply plug any port to either a 10Mbps or 100Mbps node to multiply bandwidth, boost response time and satisfy heavy load demand. Rack mountable



\$855 NWDL032

D-Link DES-1008D

8 Port Fast Ethernet Switch

The D-Link DES-1008D is a powerful desktop Dual Speed 8-port 10/100Mbps Ethernet/Fast Ethernet NWay auto-negotiating Switch.



\$269 NWDL055

Visit our
exciting
website
for
latest
prices &
products

D-Link DGE-550T

10/1000 PCI Gigabit

PCI-bus 1000M Gigabit Network Interface Card with RJ45 (Copper) Connector.



New

\$549 NWDL066

D-Link DWL-650

D-Link Air Wireless PCMCIA

D-Link AIR 11Mbps Wireless LAN PCMCIA Card IEEE802.11b make and note book truly portable within your office environment.



DWL-500 D-Link Air Wireless PCI **\$429** NWDL060

DWL-1000AP D-Link Air Access Point **\$999** NWDL059

DWL-120 D-Link Air Wireless PCMCIA **\$369** NWDL063

\$299 NWDL062

D-Link DI-804

Cable / DSL Internet Gateway Firewall / Switch

Integrated firewall configurable via web browser / Wizard 4 port 10/100 Mbps.

Ethernet Switch Broadband Cable or ADSL support and NAT, support automatic login to Bigpond cable.



\$489 NWDL068

D-Link DKVM-8

8 Port Keyboard, Video & Mouse Switch

"Easy to use, powerful, and scalable KVM solution". Controls 8 different server PC's w/keyboard. Utilizes advanced microprocessor emulation, 2 sets of cables, user friendly interface.



New

\$895 NWDL069

Model	Price	Code
DP-303 10/100 3 Port Print Server (1x Ser, 3x Par)	\$325	NWDL061
DFM-560E External 56K, V.90 Modem	\$125	FMDL000
DFM-560I Internal PCI V.90 56k Voice/Fax/Data Modem	\$75	FMDL001
DU-H4 4 Port USB Hub	\$75	NWDL037
DFE-538TX PCI bus 10/100M Fast Ethernet Network Interface Card	\$39	NWDL067

Model	Price	Code
DFE-680TXD 32-bit PC-CardBus Ethernet 10/100 PCMCIA with RJ45, No Dongles	\$149	NWDL065
DFE-650TX Fast Ethernet 10/100, PCMCIA Card with RJ45 Connectors	\$149	NWDL054
DP-602 2 Port Internet Ready Server	\$399	NWDL024
DFE-530TX PCIBus 10/100 Base TX Fast Ethernet Adaptor	\$45	NWDL002
DES-1005D 5port 10/100Mbps Ethernet Switch with 5xN-Way UTP ports	\$155	NWDL048

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



www.adelong.com.au

Refer to
our
website
for a
great
range of
Printer
Cartridges

BJC-1000SP

- Everything you need. Vivid colours, even on plain paper, plus optional high speed black & white.
- The PhotoRealism to provide the gold standard in photographic reproduction
- 4ppm Black/0.5ppm Colour
- 720 x 360 DPI



\$105

PRCAN039

BJC-6200

- Cost-effective, fast and immensely functional. The Canon BJC-6200 is the powerful print performer for busy offices. Boasting Canon's unique separate ink tank system to minimise waste and costs, and rapid print speeds of up to , this efficient Colour Bubble Jet printer makes high-volume printing truly swift and smooth, economical and efficient.
- Parallel & USB connectivity
- 0ppm Black / 7ppm Colour
- 1440 dpi



\$329

PRCAN041

BJC-2100SP

- The BJC-2100 Series Colour Bubble Jet Printer is the perfect choice for printing letters, full-colour Web pages, beautiful photos or personalized birthday greetings. It handles everything with ease and offers superb 720 x 360 dpi quality at a truly great value.
- Parallel & USB connectivity
- 720 x 360 DPI Resolution
- 5 ppm black / 2 ppm colour



\$139

PRCAN040

LBP-800

- Compact desktop 8ppm laser printer with face up or down paper delivery, 125 page Multipurpose Tray and single sheet Manual Feed Slot. Comprehensive job control via Canon Advanced Printing Technology driver software including Match Paper Size, Multipage per Sheet, collate, Form Overlay, Customer Paper Size, Toner Saver and Automatic Image Refinement modes.
- 8ppm
- 600 x 600 DPI



\$505

PRCAN030

BJC-S400

- Extraordinary Photo Printing, up to 1440 dpi, for Windows and Mac
- Supports: Windows® 95/Windows® 98/Windows® Me/Windows® 2000/Windows® Me & Windows® NT 4.0 via parallel.
- Windows® 98/Windows® 2000/Windows® Me plus Macintosh (8.1 or 9.x) via USB.
- 1440 x 720 dpi
- 9.0 ppm Black/4.0 ppm Colour
- Parallel/USB interface
- PC & USB Macintosh compatible.



\$219

PRCAN042

BJC-85

- The award-winning, portable BJC-85 Colour Bubble Jet Printer gives you the power to print wherever you go. It features a built-in USB and parallel port for connection to any compatible Mac® or PC; fast IrDA for wireless printing; dual voltage AC adaptor for hassle free world wide printing; and the ability to become a colour scanner with the optional IS-12 Scanner Cartridge.
- 720x360 dpi in black and colour.
- Built-in USB and Parallel Port
- 5 ppm black / 2 ppm colour



\$345

PRCAN038

Scanners

Canon

N-640P

- Parallel
- A4 36-bit Scanner
- 600 x 1200 DPI Optical Resolution
- Includes Canon Software Bundle

\$129

IOCAN016



D660U

- 600 x 1200dpi (documents) 1200 x 1200dpi (slides and film)
- Built-in 35mm slide and film scanning
- 42 bit input colour depth
- USB connection for Windows 98/2000 or Mac OS 8.5 +

\$259

IOCAN017



New

N-650U

- USB A4 36-bit Colour Scanner
- 600 x 1200 DPI Optical Resolution
- Windows 98, iMac & Mac G3 Compatible
- Includes Canon Software Bundle & Canon Mac Plug-in (Canon Scan Toolbox in Place of Scan gear Mac Adobe Photo Deluxe 2.0.)

\$16

IOCAN014



Printer Paper

TDK

- TDK Pro Quality 20pk. 264gsm A4 Glossy
- TDK Pro Quality 50pk. 264gsm A4 Glossy
- TDK Pro Quality 24pk. 264gsm A5 Glossy
- TDK Pro Quality 36pk. 264gsm A6 Glossy
- TDK Pro Quality Trial Pack (5) 264gsm A4 Glossy
- TDK Pro Quality 20pk. 175gsm A4 Glossy
- TDK Pro Quality 20pk. 235gsm A4 Mat
- TDK Self Adhesive Labels 10pk. 230gsm A4 Glossy
- TDK Pro Quality 50pk. 264gsm A3+ Glossy
- TDK CD Inserts 20pk. With Design Software 162gsm Glossy

\$34.95

MS7DK001

\$74.95

MS7DK002

\$18.95

MS7DK003

\$18.95

MS7DK004

\$7.95

MS7DK005

\$27.95

MS7DK006

\$29.95

MS7DK007

\$25.95

MS7DK008

\$129.95

MS7DK009

\$36.95

MS7DK010

TDK CD Inserts 20pk. 162gsm Glossy

TDK Transparencies 50pk. 158gsm A4

\$32.95

MS7DK011

\$59.95

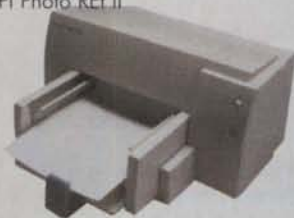
MS7DK012



Deskjet 640

- Produce projects with photo-quality images and crisp black text for school and home easily, quickly and creatively with the new HP Deskjet 840C printer.
- 6.5ppm Black / 4.5ppm Colour
- 600 x 600 DPI Photo RET II

\$179
PRHPD079



DeskJet 840

- Inexpensive and easy to use, the HP DeskJet 640C printer produces affordable, high-quality colour and black printing for all your home and school needs.
- 5ppm Black / 2.5ppm Colour
- 600 x 600 DPI
- Optional Photo printing.

\$225
PRHPD080



DeskJet 930C

- This is the printer to get if you need top notch performance but don't have the space for it. With innovative features like print cancel button, this printer is both easy to use and setup. Utilising parallel and USB interfaces, this printer is compatible with PC and Mac.
- 9ppm Black / 7.5ppm Colour
- 2400 x 1200 DPI
- Photo RET 3

\$275
PRHPD071



Deskjet 970Cxi

- The premier photo-quality printer for busy professionals who take their image very seriously. Featuring stunning photo-quality with PhotoREt 3, and laser like text at up to 12ppm. Innovations like automatic two sided printing, USB connection and extra large 150 sheet paper tray are exclusive to the 970Cxi.
- 12ppm Black / 10ppm Colour
- 2400 x 1200 DPI
- PhotoREt 3

\$545
PRHPD063



LaserJet 1200

The hp LaserJet 1200 series for business people working in the home or office features fast, economical, internet-enabled monochrome printing.

- 1200 x 1200dpi
- 15ppm
- 2 paper trays
- USB & Parallel port connection

\$799
PRHPD092



LaserJet 3150

The HP LaserJet 3150 is a versatile business tool that delivers convenient printing, faxing, copying and scanning capabilities in a single laser device, and enables you to communicate more effectively with customers and clients.

- 6ppm Black Laser
- 600 x 600 DPI
- 100 sheet paper tray

\$1159
PRHPD034



Refer to
our
website
for a
great
range of
Printer
Cartridges

ScanJet 3300C

For easy scanning and copying, try the HP Scanjet 3300C. Setup is a breeze with the USB interface and Windows 98. Just plug it in. You can scan or copy at the touch of a button.

- 36bit internal
- 600 x 1200 DPI
- 9600 DPI enhanced
- Windows 98 USB
- HP PrecisionScan LT with automated OCR
- Push button Scan and Copy

\$145 IOHPD027



ScanJet 5300C

The HP ScanJet 5300C colour scanner delivers quality results up to three times faster than other scanners. One button starts any project! The HP ScanJet 5300C offers hassle-free connectivity through the parallel port, or Universal Serial Bus (USB).

- 36bit internal
- 600 x 1200 DPI
- 9600 DPI enhanced
- USB and Parallel port connection
- HP PrecisionScan 2.0 with automated OCR

\$359 IOHPD029



ScanJet 7400C

The HP ScanJet 7400 delivers high speeds and uncompromising quality with HP's exclusive scanning technology.

- 2400 x 2400 dpi
- 48-bit Colour Depth
- USB and SCSI Connectivity
- Compatible with Windows 98/2000/ Me/NT 4.0; Mac 8.5 & above
- Push button Scan, Copy, Email, Fax and File
- 35mm slide/negative/ transparency adapter

\$999 IOHPD033



EPSON

Epson Stylus Colour 580

The EPSON STYLUS COLOR 580 is ideal for home, school and home office use. It provides easy, plug-and-play support for Windows 98/2000 and USB equipped Macintosh systems, and comes with everything you need to print beautiful colour images from the moment you set it up.

- Up to 1440 dpi Photo quality printing resolution
- Up to 6.0ppm black text printing
- Windows and Mac compatible

\$159
PREPS038



Epson Stylus Colour 680

Industry leading 2880 dpi print resolution and super fine 4pl Micro Droplets are just a couple of features delivered thanks to EPSON's state of the art EPSON Micro Piezo printing technology. Not only are images produced from this printer indistinguishable from photographs, Micro Piezo technology also ensures high-speed throughput with crisp, sharp text.

- Up to 2880 dpi Photo quality printing resolution
- Up to 8.0ppm black text printing*
- Windows and Mac compatible

\$275
PREPS039



Epson Stylus Colour 1270

The Photo 1270 is the best graphics reproduction printer on the market. Edge to edge printing, lightfast inks, roll fed paper option, 6 colour photo ink system and many more features. If you want the ultimate in desktop printers, this is the one for you.

- 9ppm Black/8.7ppm Colour
- 1440 x 720 DPI

\$899
PREP035



Sales Staff are Availa.
9am-6pm Monday to Friday
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30p
Phone (02) 8344 3160

Sales Hotline 02 83



ADOBE

Adaptex GoBack	\$115.00	SWADA002
Adaptex Easy CD Creator 5 Platinum	\$115.00	SWADA003
Adobe Photoshop 6.0	\$1,589.00	SWADO012
Adobe Illustrator V9.0	\$1,035.00	SWADO013
Adobe Publishing Collection 9	\$2,599.00	SWADO014
Adobe PageMaker Plus 6.5	\$1,295.00	SWADO016
Adobe PageMaker Plus 6.5 Cross Platform Upgrade	\$469.00	SWADO017
Adobe Premiere 6.0	\$1,409.00	SWADO019
Adobe After Effects 5.0	\$1,745.00	SWADO020
Adobe After Effects 5.0 Professional Edition	\$4,019.00	SWADO021
Adobe Framemaker 6	\$2,055.00	SWADO023
Adobe InDesign 1.5	\$1,855.00	SWADO024
Adobe TypeManager Deluxe 4.1	\$159.00	SWADO025
Adobe Web Collection 3	\$2,425.00	SWADO026
Adobe Design Collection 4	\$2,449.00	SWADO027
Adobe Digital Video Collection 5 Standard	\$3,065.00	SWADO028
Adobe Streaming Media Collection 1	\$2,559.00	SWADO029
Adobe Digital Video Collection 5 Professional	\$5,099.00	SWADO030
Adobe Acrobat 5	\$575.00	SWADO031

AUTODESK

AutoDesk AutoCAD LT 2000i	\$1,309.00	SWAUT001
AutoDesk AutoCAD LT2000i Upgrade	\$375.00	SWAUT002
AutoDesk AutoSketch R7	\$209.00	SWAUT003

BRITANNICA

Encyclopaedia Britannica Deluxe 2001	\$199.00	SWBR001
--------------------------------------	----------	---------

CLARIS

Claris FileMaker Pro 5	\$399.00	SWCLA007
Claris FileMaker Server 5	\$1,799.00	SWCLA008

STEINBERG

Steinberg Cubase 5 VST 32	\$1,395.00	SWCUR000
Steinberg Cubase 5 VST	\$795.00	SWCUR001

DRAGON

Dragon Naturally Speaking 5	\$209.00	SWDRA000
Dragon Naturally Speaking Preferred 5	\$349.00	SWDRA001

EXECUTIVE SOFTWARE

DiskKeeper 6 NT Server W/ 5 User Licence	\$2,425.00	SWEXE000
DiskKeeper 6 NT Server	\$619.00	SWEXE001
DiskKeeper 6 NT Workstation	\$159.00	SWEXE002

INTERACT

ACT! 2000	\$209.00	SWINT000
-----------	----------	----------

MACROMEDIA

Macromedia Director 8.0 Shockwave Studio	\$2,185.00	SWMAC002
Macromedia Dreamweaver 4.0	\$675.00	SWMAC003
Macromedia Dreamweaver UltraDev 4.0	\$1,325.00	SWMAC004
Macromedia Fireworks 4.0	\$675.00	SWMAC005
Macromedia Flash 5.0	\$875.00	SWMAC006
Macromedia Freehand 9.0.1	\$875.00	SWMAC007
Macromedia Dreamweaver/Fireworks Studio	\$1,009.00	SWMAC008
Macromedia UltraDev/Fireworks Studio 4.0	\$1,549.00	SWMAC009
Macromedia Flash/Freehand Studio	\$1,275.00	SWMAC010
Macromedia Web Design Studio 4.0	\$1,635.00	SWMAC011
Director 8.0 Shockwave Studio U/G 5.0 + Director 8.0 Shockwave Studio U/G Fr 7.0	\$1,099.00	SWMAC012
Macromedia Dreamweaver 4.0 Upgrade	\$349.00	SWMAC014
Macromedia Dreamweaver UltraDev 4.0 Upgrade	\$349.00	SWMAC015
Macromedia Fireworks 4.0 Upgrade	\$349.00	SWMAC016
Macromedia Flash 5.0 Upgrade	\$349.00	SWMAC017
Macromedia Freehand 9.0.1 Upgrade	\$349.00	SWMAC018
Dreamweaver/Fireworks Studio 4 Upgrade	\$459.00	SWMAC019
UltraDev/Fireworks Studio 4 Upgrade	\$459.00	SWMAC020
Macromedia Flash/Freehand Studio Upgrade	\$549.00	SWMAC021
Macromedia Web Design Studio 4.0 Upgrade	\$1,099.00	SWMAC022

MICROSOFT Operating Systems

MS Windows 2000 Professional - Retail	\$585.00	SWMS008
Microsoft Windows 2000 Pro (F. Win 95/8)	\$449.00	SWMS009
Microsoft Windows 2000 Pro (NT Upgrade)	\$309.00	SWMS010
Microsoft Windows 2000 Pro Server 5 Client	\$1,939.00	SWMS011
Microsoft Win 2000 Pro Server 5 Client Upgrade	\$955.00	SWMS012
Microsoft Windows ME Upgrade (95)	\$185.00	SWMS013
Microsoft Windows ME Retail New User	\$349.00	SWMS014
Microsoft Windows ME Promo U/G (98)	\$99.00	SWMS015
Windows 2000 Small Business Server 5 Client	\$2,959.00	SWMS016
Windows 2000 S/B Server 5 Client Upgrade	\$1,859.00	SWMS017
Windows 2000 Back Office Server 5 Client	\$8,039.00	SWMS018
Windows 2000 Back Office Server 5 Client U/G	\$4,019.00	SWMS019
Windows 2000 Server 10 Client	\$2,299.00	SWMS020
Windows 2000 Server 25 Client	\$3,439.00	SWMS021
Windows 2000 Server 25 Client Upgrade	\$1,629.00	SWMS022
Windows 2000 Server 10 Client Upgrade	\$1,159.00	SWMS023
Windows 2000 5 Client Access Licence	\$375.00	SWMS024
Windows 2000 20 Client Access Licence	\$1,465.00	SWMS025
Windows 2000 Terminal Server 5 Client	\$3,489.00	SWMS026
Windows 2000 Terminal Server 20 Client	\$5,359.00	SWMS027
Windows 2000 Terminal Server 5 Client U/G	\$739.00	SWMS028
Windows 2000 Terminal Server 20 Client U/G	\$2,589.00	SWMS029

MICROSOFT Office Applications

Microsoft Office 2000 Value Pack	\$605.00	SWMS030
Microsoft Encarta 2001 Deluxe	\$139.00	SWMS031
Microsoft Encarta 2001 Reference Suite	\$165.00	SWMS032
Microsoft Works Suite 2001	\$159.00	SWMS033
Microsoft Office XP Standard	\$969.00	SWMS034
Microsoft Office XP Standard Upgrade	\$485.00	SWMS035
Microsoft Office XP Professional	\$1,165.00	SWMS036
Microsoft Office XP Professional Upgrade	\$679.00	SWMS037
Microsoft Office XP Developer	\$1,555.00	SWMS038
Microsoft Office XP Developer Upgrade	\$1,065.00	SWMS039
Microsoft Publisher 2002	\$249.00	SWMS040
Microsoft PowerPoint 2002	\$655.00	SWMS041
Microsoft PowerPoint 2002 Upgrade	\$209.00	SWMS042
Microsoft Visio 2002 Standard	\$385.00	SWMS043
Microsoft Visio 2002 Standard Upgrade	\$189.00	SWMS044
Microsoft Visio 2002 Professional	\$969.00	SWMS045
Microsoft Visio 2002 Professional Upgrade	\$485.00	SWMS046
Microsoft Outlook 2002	\$209.00	SWMS047
Microsoft Access 2002	\$655.00	SWMS048
Microsoft Access 2002 Upgrade	\$209.00	SWMS049
Microsoft Word 2002	\$659.00	SWMS050
Microsoft Word 2002 Upgrade	\$159.00	SWMS051
Microsoft Excel 2002	\$655.00	SWMS052
Microsoft Excel 2002 Upgrade	\$209.00	SWMS053

MYOB

MYOB Accounting 10.5	\$399.00	SWMY009
MYOB Accounting 10.5 Upgrade	\$199.00	SWMY010
MYOB First Accounts 3.5	\$199.00	SWMY011
MYOB Plus 10.5 W/ Payroll	\$549.00	SWMY012
MYOB Plus 10.5 Upgrade	\$209.00	SWMY013
MYOB Power Pay 5	\$495.00	SWMY014
MYOB Premier 4.5 With 3 User	\$1,025.00	SWMY015
MYOB Retail Manager 4	\$1,025.00	SWMY016

INTUITE

Quick Books 7.4	\$225.00	SWINT016
Quick Books Pro 7.4	\$399.00	SWINT017
Quick Books Pro 7.4 + Payroll	\$499.00	SWINT018
QuickBooks 8 Personal	\$75.00	SWINT019
QuickBooks 8 Personal Plus	\$125.00	SWINT020
QuickBooks 8 Cashbooks	\$99.00	SWINT021
QuickPos 3	\$749.00	SWINT022
QuickPos 3 + QuickBooks Pro 7	\$1,059.00	SWINT023

QUARK

Quark Xpress 4.11	\$3,225.00	SWQUA008
Quark Xpress Passport 4.11	\$4,725.00	SWQUA009

RED HAT

Red Hat Linux V7.0 Standard Edition	\$79.00	SWRED000
Red Hat Linux V7.0 Deluxe Workstation	\$169.00	SWRED001
Red Hat Linux V7.0 Professional Server	\$379.00	SWRED002
Red Hat Linux V7.1 Reference	\$69.00	SWRED003
Red Hat Linux V7.1 Deluxe Workstation	\$145.00	SWRED004
Red Hat Linux V7.1 Professional Server	\$229.00	SWRED005

SYSMANTEC

Norton Antivirus 2001	\$89.00	SWSYM025
Norton Systemworks 2001	\$139.00	SWSYM026
Norton Systemworks 2001 Professional	\$185.00	SWSYM027
Norton Utilities 2001	\$89.00	SWSYM028
Norton Clean Sweep 2001	\$65.00	SWSYM029
Norton Ghost 2001	\$129.00	SWSYM030
Norton Internet Security 2001	\$105.00	SWSYM031
Symantec Antivirus 2001 OEM	\$45.00	SWSYM032
Norton Antivirus Small Business Solution 10 Client	\$1,029.00	SWSYM033
Norton Antivirus Solution 7.5	\$185.00	SWSYM034
PC Anywhere 10 Host & Remote	\$239.00	SWSYM035
PC Anywhere 10 Host	\$149.00	SWSYM036
PC Anywhere 10 5xHost & 1xRemote Licence	\$469.00	SWSYM037
WinFax Pro 10	\$115.00	SWSYM038
Norton Antivirus Corporate Solution 7.5	\$85.00	SWSYM039
Norton NAV Corp 7.5 upg licence	\$59.00	SWSYM040

Backup Exec Desktop 4.5	\$139.00	SWVER001
Backup Exec Desktop 4.5 Pro	\$219.00	SWVER002
Backup Exec NT/2000 8.5	\$1,309.00	SWVER003
Backup Exec NT/2000 8.5 Upgrade	\$655.00	SWVER004
Backup Exec NT/2000 8.5 Advanced Server	\$1,935.00	SWVER005
Backup Exec 8.5 Exchange Agent	\$1,329.00	SWVER006
Backup Exec IDR Option	\$809.00	SWVER007
Backup Exec Openfile Agent	\$1,125.00	SWVER008
Backup Exec Oracle Agent	\$1,125.00	SWVER009
Backup Exec SQL Agent	\$1,275.00	SWVER010

COMPUTER ASSOCIATES

Vet AntiVirus Netsurfer	\$75.00	SWVET000
Vet AntiVirus NT Server	\$485.00	SWVET001

JASC

PaintShop Pro 7	\$215.00	SWJAS000
-----------------	----------	----------

POWERQUEST

Power Quest Partition Magic 6	\$115.00	SWPOW000
-------------------------------	----------	----------

NETWORK ASSOCIATES

McAfee Virus Scan 5.11	\$75.00	SWNET004
------------------------	---------	----------

WINZIP

WinZip 8.1	\$85.00	SWWIN000
------------	---------	----------

See our website for more
software information &
listings.

www.adelong.com.au

OR

Call sales on
02 8344 3190

CPU Switches/Data & USB Devices



Never again will you need multiply monitors, keyboards and pointing devices with the range of CPU Switching devices. A single keyboard, mouse and monitor can control up to 8 computers simultaneously without any cable changes. These CPU Switches are digital and require only the push of a button. Excellent for network administrators or anyone who wishes to control 2 or more computers hassle free!

Features: - Supports Mouse/KB emulation for automatic bootstrap - Supports VGA, SVGA & Multisync monitors
- LED's give current status - Easy to install & use

CS-128

• 8 Port Switch Box

AT & PS/2



Item Code Description

CBGEN127 AT CABLE SET for CS-128

CBGEN128 PS/2 CABLE SET FOR CS-128

Price

\$35

\$35

\$695

DSADE036

CS-138

Control up to 8 PCs with the CS-138.

- VGA Bandwidth of 180Mhz
- VGA Resolution of 1600x1200 @60Hz

Rack mountable PS2 interface



\$725

DSADE041

CS-122

Switch between 2 PCs.

Features:

- VGA Bandwidth of 180Hz
- VGA resolution of 1600x1200 @60Hz



\$299

DSADE037

CS-114

Control up to 4 PCs with the CS-114.

- VGA Bandwidth of 100Mhz
- VGA Resolution of 1024x768 @80Hz
- Support intellimouse wheel



\$379

DSADE038

VS-138

8 Port Video Splitter
1600 x 1200@60Hz

\$295

DSADE001



VS-134

4 Port Video Splitter
1600 x 1200@70Hz

\$195

DSADE002



VS-132

2 Port Video Splitter
1920 x 1400@80Hz

\$125

DSADE048



CS-12c

• 2 Port Mini KVM Switch Box

Cables included

\$195

DSADE054



New

CS-14c

• 4 Port Mini KVM Switch Box

Cables included

\$275

DSADE053



New

USB Link

Win 95B, 98 Peer to peer network cable for USB capable desktop or laptop computers. Supported under Windows 95 rev. B and Windows 98, this cable enables files to be transferred between machines.

\$59

NWKOU000



USB to Printer Cable

Win 95B, 98 Add parallel port devices to your USB capable PC. Run standard printers using a fast and simple connection system. Supports standard, ECP and EPP parallel port modes.

\$50

CBKOU000



CPU Switch Cable Set

Each cable set connects to one computer.

Model	Price
3M AT Cable Set CS/122/114	\$29 CBGEN098
3M PS/2 Cable Set CS/122/114/138	\$29 CBGEN099
3M AT Cable Set CS128	\$35 CBGEN127
3M PS/2 Cable Set CS128	\$35 CBGEN128
1.8M PS/2 Cable Set CS122/114/138	\$25 CBGEN164
3M PS/2 Cable Set CS 1008/1016 Audio	\$35 CBGEN168
3M AT Cable Set CS1008/1016 Audio	\$29 CBGEN169

Screen Filters

15", Low Radiation, Anti Glare Glass

\$35 HSADE027

17", Low Radiation, Anti Glare Glass

\$55 HSADE028

20", Low Radiation, Anti Glare Glass

\$69 HSADE029

I/O Expansion Cards

8 BIT ISA Printer Card

\$25 CCGEN017

ISA High Speed Serial Card with 1xFIFO 16C550 Uart chip

\$35 CCGEN034

ISA High Speed Serial Port with 2xFIFO 16C550 Uart chips

\$49 CCGEN035



PCI Printer Card

\$49 CCGEN032

Dual PCI Printer Card

\$69 CCGEN037

PCI One High Speed Serial Port Card with 32 FIFOs

\$55 CCGEN036

PCI Two High Speed Serial Port Card with 32 FIFOs

\$65 CCGEN039



Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



2CDs**What's hot on APC July CDs****Play on**

Whatever your gaming style — fast, dangerous or character driven — there is a place for you in the multiplayer gaming world. This month, some of the best games around have been brought together in a multiplayer gaming extravaganza on CD 2.

**Getting started with Cloudscape**

This month, our July Workshop section outdoes itself by including a full version of Cloudscape by Informix Software. This Java-embeddable database management system can be used to create ebusiness applications, such as smart ecatalogues and deployed portals. It facilitates interactions between traditional computing devices and Internet-enabled appliances over both wired and wireless networks.

For a tutorial on Cloudscape 3.6 Developer, see the Workshop section of this month's magazine.

Plus all the regular tips, tricks, code and reviews of shareware from our OS specialists can be found in Workshop on CD 1.

Manage your money

Need some help keeping track of your personal accounts? Looking for the right software for managing your business? Whatever your requirements, APC can help with 10 popular accounting packages for you to try on CD 2.

As an exclusive offer to APC readers, Quicken is offering \$10 cash back when you purchase the full version of QuickBooks 8, QuickPayroll 8,

QuickBooks PRO 8, or QuickBooks PRO 8 with QuickPayroll 8.

**First Take: FileMaker Pro 5.5**

Long considered a favourite among database users for its combination of simplicity and power, FileMaker is an appealing alternative to Microsoft Access.

Try the new edition for Windows and Mac.

Your guide to the cover CDs

The APC cover CDs complement the magazine and apcmag.com. Each month's disc collection features software related to articles in that issue, as well as special CD-only features and Web browsers.

Each piece of software includes instructions on whether you need to unzip the file before installing it, and most also include README files.

The CDs were created in HTML. You do not need any special software to access them, other than a standard browser.

All software on the CDs is provided as is, without any warranty, expressed or implied. Complete terms and conditions are included on the CD; click on the Disclaimer link for details.



APC July CD contents

CD 1

Workshop

Cloudscape 3.6 Developer

Windows: 007 Stealth Activity Recorder & Reporter 1.35, ActivIcons 3.11, Amnesia Cache & Cookie Manager 3.0, Audiogalaxy Satellite 0.605, Buzof 1.6, IncrediMail 2001, MemTurbo 2.1, Morpheus 1.48, PhotoThumb 1.0, Tiny Personal Firewall 2.0.12

Linux: Adorefind, Astaro Security Linux 1.807, Ettercap 0.4, Freedom Internet Privacy Suite 2.1, GAIM 0.11, Galeon 0.10.4, HylaFAX 4.1 beta 3, LionFind, Lopster 0.98, McAfee VirusScan for Unix 4.14.0, Opera 5.0b7, Samba 2.2, Webmin 0.85, WebWasher 3.0, X2X

PDA: Adobe Acrobat Reader, Chopper Alley, EtCatMan 1.0, iTouch WAP Browser, KBrowser, Mini Invoice, Oliver's Action Pack 1.5, Stock Manager, Sunysoft GSM Manager, Turjah II, Voice LookUp

Mac: Audion 2.1pr3, Default Folder 3.1, DragThing 4.0, Drop Drawers 1.5.3, GraphicConverter 4.0.5, OmniGraffle 1.0b3, OmniWeb 4.0cf3, Screen Catcher 2.3.2, Tex-Edit Plus 4.1.2b2, TinkerTool 1.2

OS/2: Antiword 0.31, Battery 1.0, Enhanced E Editor 2.2, Larsen

First Take

FileMaker Pro 5.5 trial

Patch Panel

Red Hat Linux 7.1 updates
Age of Empires II, Quake III: Arena 1.27g update, Star Trek Voyager: Elite Force 1.2 patch, Tribes 2 update to 22460

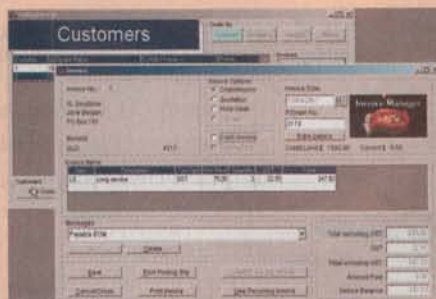
Toolkit

Adobe Acrobat Reader 5.0, Aladdin StuffIt 5.5, Aladdin StuffIt Expander 6.01, Downloader for X 1.23, Eudora 5.1, GoZilla Free 3.92, ICQ 2000b 4.63 Build 3279, IglooFTP PRO 1.0.2, Interarchy 4.1, LinZip 1.1, mIRC 5.82, RealPlayer 8.0, smIRCle 1.0.1a23, WinZip 8.0, WS_FTP LE 5.08

CD 2

Features

Accounting software: Attaché Catapult, Cashflow Manager 1.4, EasyBooks 10.02.22, ezBooks 1.2, InCHARGE Cashbook, Microsoft Money 2001 Deluxe, MYOB Accounting Plus 10.5 Test Drive, MYOB FirstAccounts 3.5 Test Drive, Quicken QuickBooks PRO 8.0, Quicken QuickPayroll 8.2



GameZone

Multiplayer gaming special: Half-Life, Quake III: Team Arena, Unreal Tournament 4.38, Diablo II, Age of Empires II: The Age of Kings, StarCraft

Browsers

Microsoft Internet Explorer (32 bit) 5.5



M(15+) Some of the games on this CD-ROM have low-intensity depictions of animated violence.

How to run the CDs



Before using the CDs, please read the Conditions of Use online at apcmag.com under CDs. These CDs use an Autorun feature for Windows 95, 98, 2000 and NT systems. Just insert a cover CD and your browser will automatically load with the APC CD front page. Users of other platforms can launch their favourite browser and load the file DEFAULT.HTM in the root directory of the CD.

You should carefully read the licensing agreements and honour any

evaluation or shareware terms specified, read all instructions and README files, and virus check every program before use.

APC has taken every care to ensure that the software provided is useful and that it works, but we cannot accept responsibility or liability for any of the products included. If you have any problems, refer to the Help section on the back of the CD insert.

Kicking evil's butt

Fallout Tactics

The release of the original *Fallout* in 1997 helped rejuvenate the ailing RPG market with its remarkable blend of story-telling, combat and character interaction. Set in a postnuclear world, the game had you roaming desert wastelands, fighting raiders, mutants, ghouls, thugs, drug dealers and religious fanatics. This was a rough place to live, and the game didn't shy away from adult content — it is a world inhabited by pimps, pushers, prostitutes and megalomaniacs.

Not surprisingly, fans have been eagerly awaiting the third instalment in the series. Therefore, many were surprised when the game's publisher, Interplay, announced that the next title in the series would not be an RPG. *Fallout Tactics* is, as the name suggests, a tactical-strategy game, similar in concept to the *X-Com* and *Jagged Alliance* series'. Despite its focus on combat, it still has a lot in common with its RPG predecessors. It is basically a stripped-down version of *Fallout* — lots of action and very little interaction. This isn't necessarily a bad thing, as other elements of the game more than make up for its role-playing shortcomings.

You start the game as an initiate in a faction of the Brotherhood of Steel. The Brotherhood is a pseudoreligious order of knights, bent on bringing its own brand of justice to the wasteland. This means you and your squad spend a lot of time kicking evil's butt — and using scare tactics to get the locals to join your cause.



One of the most noticeable differences between *Fallout Tactics* and its predecessors is the switch to real time combat. The two earlier versions of *Fallout* rely on a turn-based system whenever you go into battle. In *Fallout Tactics*, you still have the option to play taking turns, but you're strongly encouraged to make the jump to real time. This makes coordinating your squad's actions much more important — and even a tad more thrilling. Having a couple of snipers fire cover shots at a mutant while you sneak a better-armed character behind him is great fun.

Character generation and growth is almost the same as in *Fallout*; you still have six basic characteristics and start out with 18 specific skills. You can enhance these abilities by spending 'skill points', which are awarded each time you go up a level. Those awesome 'perks', gained every three levels, are back, allowing you to customise your character by adding distinctive characteristics.

Party composition and control is a lot more polished. You start off with a primary character of your own choice (or design), but all characters are accessed in the same way. The team element has been executed much more effectively than in earlier *Fallout* games. You spend about as much time developing the skills of your team members as you do your own, so you do care if your squadmates get killed off.

Much has been made of the mission-based structure of *Fallout Tactics*, but it still retains the free-roaming nature of its predecessors. You check into different Brotherhood strongholds around the wasteland, and each one provides a few missions before you are forced to move onto the next.

After adjusting to the real time combat, the main problems APC encountered related to the graphics. When tested on



Battle your way through the world of *Fallout* with tactics and strategy.

a Pentium II 350MHz with a TNT2, the game was only just playable. When buildings with multiple floors and ceilings that disappear to give you an internal view appeared, the graphics slowed down significantly. You need at least a 450MHz processor to make *Fallout Tactics* an enjoyable experience.

Despite a few shortcomings, *Fallout Tactics* is a great game. However, fans looking for *Fallout 3* might be a little disappointed with the simplicity of certain aspects of the game. Nevertheless, *Fallout Tactics* is more than capable of standing on its own merits.

Daniel Gardiner



Contact Interplay
Phone (02) 9959 1074
Online www.interplay.com/falloutbos
Price \$87.95
Requires Pentium II 300, Windows 95, Windows 2000, 64M RAM
Classification MA(15+)
Rating ■■■■■■■■

F1 Racing Championship

Geoff Crammond's Grand Prix series has been synonymous with Formula One racing since the mid-1990s. The trend started with the groundbreaking Grand Prix 2 — and its superior graphics and perfect handling weren't surpassed until its successor, Grand Prix 3, was released late last year. Many developers have tried to emulate Crammond's successful formula; notable attempts are EA's F12000 and Ubi Soft's F1 Championship Season 2000. F1 Racing Championship is Ubi Soft's latest attempt to break the Grand Prix stranglehold, and amazingly, it might just do it.

All Formula One games have a multitude of options and settings, which often seem daunting to all but the most experienced drivers. However, after watching F1 Racing Championship's slick introduction (with a pumping Garbage soundtrack), you just know that this is going to be a polished and accessible game. Ubi Soft has cleverly masked all the complexities that Formula One gamers demand with an easy-to-use menu system. All the options are still there; they're just not in your face. Testament to this is the garage, which has always been a nightmare to

use and navigate. In F1 Racing Championship, setting up the cars is a breeze, and you'll have your perfectly tweaked Ferrari racing in no time.

Upon entering the track, most gamers will be blown away by the incredible graphics, which are almost photorealistic. Supporting resolutions of up to 1,600 by 1,200 in 32-bit colour, F1 Racing Championship presents more impressive cars, textures and backgrounds than ever before. The attention to detail is astounding; tyres get dirty, marks are left all over the track, dust kicks up from behind cars in front, and the drivers' heads move with the G-forces. The graphics also create a real sensation of speed — hurtling down the main straight of Melbourne Park at 300km/h is sure to send tingles down the spine of any Australian fan.

Sadly, these incredible graphics are let down by substandard sound effects. The high-pitched scream of a V10 engine doing 18,000rpm sounds more like a child's cry, while crashing into walls at high speeds produces an equally unsatisfying thump. However, the sounds are soon forgotten, and once you finish admiring the graphics, your attention turns to the real backbone of all driving games: the physics engine and how the cars are handled.

The cars feel somewhat heavier than those in Grand Prix 3 (the benefits of which are sure to polarise the racing community), but driving in F1 Racing Championship is an almost perfect experience. Easing into corners under heavy brakes yields the necessary understeer, and powering out of a hairpin too quickly will only see you deposit rubber on the track. Driving Formula One cars properly is always extremely difficult, but things have been made a little easier by the inclusion of driving aids such as braking, throttle and steering help.



Cruising around the beautiful tracks in a car that feels just right is truly a joyful experience, but Formula One games are really about the racing. Initially, F1 Racing Championship seems to excel in this area, with the first few corners all tightly contested and the other drivers not willing to budge an inch. Unfortunately, it soon becomes apparent that the computer-controlled opponents are always incredibly aggressive, holding their line even if it means turning into you. This sort of AI makes racing extremely difficult, and often disappointing, but Ubi Soft has promised a patch to fix these problems.

F1 Racing Championship undeniably provides some of the most realistic graphics and driving available today. It is let down by its poor AI, but even if Ubi Soft's patch doesn't live up to expectations, it is still worth buying. F1 Racing Championship should keep the Grand Prix 3 frontrunners looking over their collective shoulders for some time yet.

Alan Crawford

Contact Ubi Soft
Phone (02) 9362 1414
Online www.ubisoft.co.uk
Price \$89.95
Requires Pentium II 300, Windows 95, 64M RAM
Classification G(8+)
Rating ■■■■■■■■

Tribes 2

When the original Tribes was released in 1998, it was a groundbreaking success for Sierra and Dynamix. No company had attempted a multiplayer-only retail game before, let alone one that so heavily relied on team-oriented gameplay. Tribes inspired more recent successes such as Unreal Tournament and Quake 3: Team Arena, and even today it manages to hold its own against them. More than two years later, the sequel has finally been released. Can it live up to the pressure of being heir apparent to the throne of multiplayer gaming?

Tribes 2's setup is very similar to Unreal Tournament; there are two teams competing in a variety of gameplay modes. The most common is Capture the Flag. In this mode, two teams attempt to steal each other's flags and return them to their own bases to score points.

One of the most distinctive features of the original Tribes was the wide, open landscape and this is still apparent in the sequel. The scale of Tribes 2 is much larger and players look like ants scurrying around the towering buildings that dot the vast landscapes. This is all rendered using a great-looking proprietary engine. Tribes 2 needs a monster of a machine to run though, so take the minimum requirements seriously.

Players have their choice of three armour types: the light Scout, the medium

Assault and the hulking Juggernaut. Players also choose from 10 weapons, 13 utility packs and four grenade types. To help navigate the rolling terrain, every player has a jet pack with a limited supply of energy that gradually recharges when used. The game also features six vehicles to help players travel from place to place. The bases are quite autonomous, and come complete with defence turrets

and force fields, making it necessary for team-mates to mount combined attacks. All this complexity can be overwhelming at first, but the rich variety allows players to tailor their roles as much as they wish. You could easily be driving a tank one minute, then infiltrating an enemy base under cover of a cloaking pack the next.

You might expect all of this to cause complete chaos, but most games tend to take on a life of their own, even without a dedicated commander. The dynamic nature of the game means that players must respond to their enemies' tactics and develop counter-tactics accordingly. This means setting up defences when necessary, or going on offensive runs when it's not. It all plays out beautifully as the veneer

of order and teamwork emerges from the frenetic chaos, even in massive games of 64 players.

Unfortunately, Tribes 2 does contain some buggy code. Many of the game-stopping issues have been dealt with, thanks to a torrent of patches, but there are still lots of problems. There are reports of inexplicable crashes, problems with copy protection, and



connection-breaking lag. Certain maps cause a frame rate black hole as more people join, eventually causing jerkiness on any machine, regardless of resolution or detail settings, and many 3dfx owners have reported consistently unplayable frame rates.

The community features, such as the buddy list and server browser, are inadequate and slow, and they don't work properly. Dynamix promises to fix these issues (and judging by their past level of community support, they are likely to keep their word), but at the moment, the game is often frustrating.

As with any game with this level of complexity, the learning curve is rather steep. Tribes 2 doesn't play like a normal first person shooter, and it takes a significant amount of time and patience to learn the game.

Overall, Tribes 2 is a multiplayer game of unparalleled depth. If you can cope with the steep learning curve and the bugs, you'll be rewarded with one of the most engrossing multiplayer experiences there is to be had.

Daniel Warner



Contact Jack of All Games

Phone (02) 9482 7920

Online www.tribes2.com

Price \$87.95

Requires Depends on your 3D card (see Web site or product box for details)

Classification M(15+)

Rating ■■■■■■■■

Gamespy

● In a surprise twist, Ion Storm Austin have declared that two of their highly anticipated upcoming PC games, *Thief 3* and *Deus Ex 2*, will appear on Xbox first. The designers have stated that developing for the Xbox first (which has specific hardware) simplifies the design process. *Thief 3* is the third game in Looking Glass Studios' series of first person sneakers — the licence was passed onto Ion Storm Austin after Looking Glass Studios' closure last year. *Deus Ex 2* is the sequel to Ion's recent action RPG hit, set in a dark sci-fi future.



● Apparently, Ubi Soft has garnered permission from Sony Pictures to develop a number of games based on the recent Hong Kong martial arts hit, *Crouching Tiger, Hidden Dragon*. Exact details of the games are sketchy at present, and it's not known what genres the titles will fall into. At present, the games are scheduled to arrive on multiple platforms, such as the PC, Xbox, PlayStation2 and GameCube. Expect release dates around autumn 2002.

● *Jedi Outcast: Jedi Knight II* is the working title for LucasArts' next game in the series that began with 1994's *Dark Forces*. *Jedi Outcast* is being developed by Raven Software, the company responsible for *Heretic*, *Soldier of Fortune* and *Star Trek Voyager: Elite Force*. Players will once again assume the role of Jedi Kyle Katarn. In *Jedi Outcast*, Kyle has backed away from development of his Jedi powers for fear that he may be tempted by the Dark Side. However, a new threat arises, and Kyle is forced back into action. The game uses the Quake III engine, and will have both single player and multiplayer features, as well as lightsaber combat similar to that found in its predecessor. *Jedi Outcast* is also expected in autumn 2002.



Settlers IV

Settlers first saw the light of day on the Amiga, followed by a PC port that, for reasons that remain a mystery, was called *Serf City*. *Settlers II* and *Settlers III* followed; games companies evidently like innovative naming conventions. Accordingly, after the appropriate amount of time, a copy of *Settlers IV* has turned up at APC.

For anyone who hasn't played a *Settlers* game before, the premise is remarkably pedestrian compared to the rest of the RTS market. You control one feudal tribe from a selection, and your aim is to eventually take over the world. The focus of the game has always been more on micromanagement than on all-out warfare, which makes game-play extremely slow for those who prefer the approach of games like *Command & Conquer*.

You're in control of a feudal economy, which is much more complicated than it might seem. For example, if you want something as simple as coal, you need wood (from a woodcutter and a sawmill) and stone (from a stonecutter) to build the mine, then pickaxes (meaning you need a toolmaker, an iron foundry and an iron mine) and suitable miners. Then you need grain farms, mills, bakeries, anglers, sheep farmers and slaughterhouses to keep your miners working. The delicate layers of interdependency in resource management will either hook you for hours (and most missions do require several hours) or bore you rigid.

If you've played *Settlers* before, you'll be impressed by the new features in *Settlers IV*. The graphics update evident in *Settlers III* has been further smoothed and refined. The mousewheel can now be used to zoom in and out, and there are many more simple animations that make the experience of just watching your settlers get on with it more enjoyable. Buildings are still constructed using basically the same 'one line at a time' method from the original, which does make this version look dated, especially when compared to titles like *Black & White*.

The military focus is stronger, and it's now possible to order specific, higher-grade troops and weapons, as long as you have the gold to back it up. Combat still consists of massed troops fighting each other, rather than laying siege to buildings, and victory inevitably goes to the side that can handle the most attrition. Magic plays a part in combat, especially when certain devastating spells (I'm looking at you,



Vikings) come into play. The regular campaign missions do put a lot of emphasis on eventually defeating the opposing tribes, but simple building-only maps are also available if that's to your taste. There's also a separate campaign that changes *Settlers'* rules entirely: the Dark Tribes.

The Dark Tribes, under their leader Morbus, have been banished to Earth by the higher gods, and now seek to turn it into a dark and scary place by permanently scarring large tracts of land. Your mission in this campaign is to stop them, partly by fighting them and partly by employing gardeners to restore the ravaged land.

Along with the gardeners, there are a large number of new settler types and new buildings. Some of these are distinguished simply by tribal differences — the Romans like wine, while the Vikings prefer mead — but some of them have a definite impact on what strategy you use. For example, Vikings are combat machines, but they tend to be outclassed by superior Roman technology.

This is a slow and considered game. Some people love this level of involvement, and others will quickly grow bored waiting for that last plank of wood to be delivered to the warship. If you've played *Settlers* before, or have an affinity for slower-paced RTS games with an emphasis on management rather than combat, *Settlers IV* is a worthy purchase.

Alex Kidman



Contact OziSoft
Phone (02) 8303 6800
Online www.settlers4.com
Price \$87.95
Requires Pentium 200, Windows 95, Windows NT 4.0 with Service Pack 5, 64M RAM
Classification G
Rating ■■■■■■■■

YOU'LL BE BLOWN AWAY

WIN
A 12 MONTH
TRAINEESHIP AT
PLAYSTATION®2
MAGAZINE
SPONSORED BY
communic8



**THE ONLY
PLAYABLE DISC
THE ONLY OFFICIAL
MAGAZINE**

**OFFICIAL AUSTRALIAN
PLAYSTATION®2 MAGAZINE
ISSUE #04 ON SALE NOW**



OUT OF MYST . . .

AND INTO

*The creators of the next chapter in the groundbreaking Myst series are hoping to stun audiences with a truly 'interactive movie'. With a new author, new technology, new characters and five new worlds, can Myst III: Exile do the impossible and drag gaming into the mainstream? **Fiona Angus** reports*

Mary De Marle is waiting to hear the verdict on a story she has poured the last two years of her life into. She hopes her endeavours will bring a new level of narrative sophistication — and a much better ending — to one of the world's most popular games.

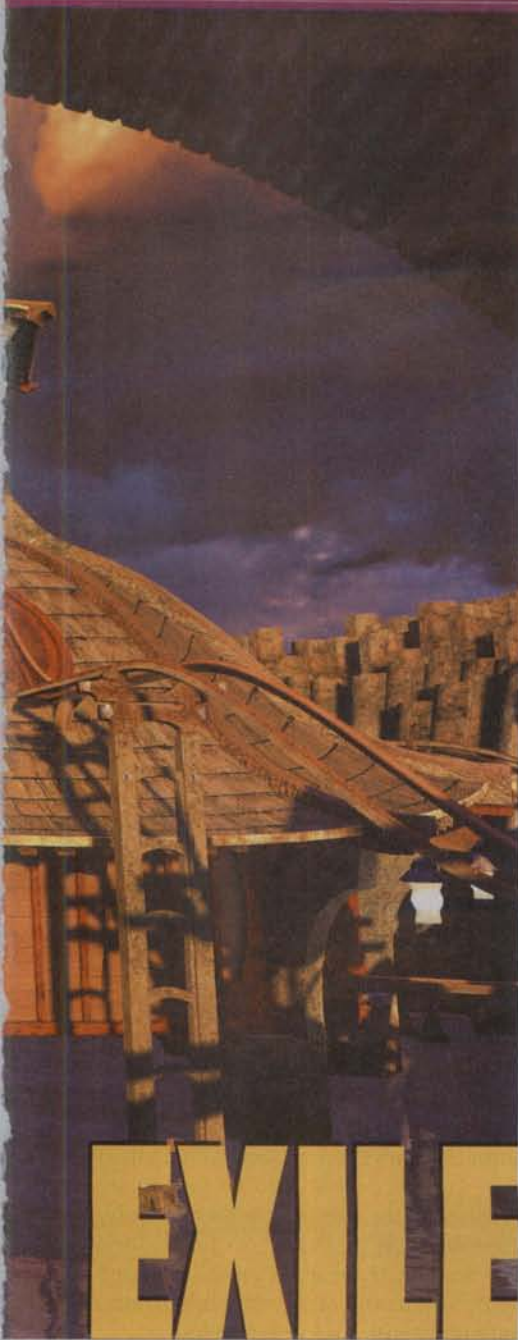
The makers of Myst claim that over 10 million people have entered their world since 1993. Yet despite its success, the series is reviled by many gamers. APC's game reviewers often take gentle jabs at

the series, including listing Myst and its sequel Riven as two of the 'Worst ever games' (APC January, page 192).

This doesn't seem to bother De Marle or Exile producer Greg Uhler. The creators of the latest chapter in the contentious series were in Sydney on the day Exile was launched. This is the first time the Myst series has left the hands of its original creators, and with upwards of \$6 million invested in the project, expectations were high and nerves were jangling as they

awaited the verdict of a legion of fans already disillusioned by Riven. "Myst is so mainstream, it's not really for gamers," Uhler said.

Myst has none of the 'kill and thrill' elements of other popular games. You are placed inside a beautiful but troubled fantasy world with a series of puzzles, plots and characters to unravel. Audience research shows that 48% of Myst players are female, even though they only make up 15% of the general gaming popula-



tion. Computer entertainment has remained largely on the fringe of mainstream leisure activities, and *Myst* has been the closest gaming has ever come to challenging the popularity of film and novels. "We are trying to provide a game experience on a computer that is similar to an interactive movie, where you are the main character and you make a difference to the story-line," Uhler said. The series uses actors' voices and even has its own original orchestral soundtrack.

Uhler said *Exile* is designed to be played on a basic home PC. It is aimed at people with little interest in games who might only play one or two games per year. "These people are much more familiar with movie elements," he said. The villain in *Exile* is a recognisable Hollywood face — Brad Dourif, who received an Academy Award nomina-

tion for *One Flew Over the Cuckoo's Nest* and is currently working on *The Lord of the Rings*. Uhler tried to recruit Gary Oldman for the part, but he was "very expensive — way out of our reach".

The attraction of the original *Myst* was its stunning graphics and imaginative worlds, but to sustain the series, the creators have to draw fans into new territory. Gamers describe *Myst* as a pretty but boring slideshow, and Uhler is the first to agree that aesthetics aren't enough to sustain a series like *Myst*. "You can't just have a beautiful world being your motivation the whole time," he said. This is why he places so much emphasis on the role of the writer.

The greatest story ever told

The success of *Exile* hinges on whether De Marle has written an interactive narrative with an engaging plot and convincing characters — and whether the technology can support this kind of storytelling.

With a background in film and television, and a stint with animation company Hanna-Barbera, she admits that trying to tell a story through a PC is a difficult task. When De Marle begins to talk about the script for *Exile*, the language she uses to describe her writing slips in and out of several genres: film, theatre, games, novels and music.

De Marle had more input into the shape and direction of *Exile* than most game writers could ever hope for. She was given independence from the designers and was charged with making the characters believable. She said writing across several genres was a difficult task, and to do it successfully she had to be led by the story. "I was writing for anyone who loves to read novels, watch movies, and get involved in a good story."

The *Myst* series revolves around the story of Atrus, a man with the power to create worlds. In *Myst*, Atrus's idyllic life is shattered by his sons, who battle for supremacy over their father and each other, destroying several worlds in the process. You are cast in the role of benevolent wanderer, and Atrus asks you to save the world from his insane offspring. In the sequel, *Riven*, Atrus again calls on you to help him rescue his wife from his tyrannical father.

Exile picks up the story 10 years after *Riven*, as the sins of Artrus's family come

back once again to haunt him. De Marle has chosen to draw out a new character from the more successful first instalment, which she hopes will add more complexity and human emotion to the game. A victim of his sons' destruction plots a terrible revenge against Atrus, and you are the only one who can uncover the villain's plan. "We're dealing with emotions that I think everyone can understand — the desire to get home, the desire to be with people who love you. There is also a moral dilemma in the story. I want people to see that life isn't black and white; I want people to identify with and feel for the characters," De Marle said.

A writer's world

De Marle worked with the designers, adding crucial story elements to the graphics to make *Exile* cohesive and convincing. "At the beginning of the project, we wanted to have as much creative input and imagination as possible, so they sent me off to start developing story ideas. Then they told the designers to go ahead and start coming up with ideas for visuals that weren't related to the story." There were five designers, one in charge of each world. Inspiration was drawn from the Grand Canyon, Zion National Park, Asian architectural themes, a purely 'organic' world, and a world similar to the original *Myst* Island. "We melded these together, so that in the end, we had a very complete story," De Marle said.

Out of necessity, she wrote the scripts for the filmed sequences first. "A story is a very linear experience and you do have to build it over time. However, in a computer game you never know what the player is going to do. To be successful, you have to give players choices, so that

they feel they are making the decisions. I had to break up the story and figure out how to tell it from different directions." The filmed sequences are spaced throughout the game and drive the story to its climax.

The *Myst* series is also constructed around the journals of the main characters. De

Marle compared the journals to a series of short stories. The audience must invest time in reading the journals to get inside the characters' minds. However, mixing live action and short stories, along with puzzles and graphics, was difficult.





"When I sat down to write them, I thought, if I write this journal, I'm telling you the story that I've already told you in the live action segments. When I realised that, I had to call a meeting of design staff, and tell them we had a problem." In the end, she and the designers used a mural to tell the background story and arranged the journals in different areas of Exile.

The only real sticking point was the ending. One problem emerged because the authors of *Myst* and *Riven*, who hold the licence for the series, had the right of veto over the story. "I kind of felt a little bit of a let-down at the end of *Riven*," De Marle said. She insists she has a much better ending that, unlike *Riven*, provides closure.

It was Uhler who had to tiptoe around the restrictions laid down by the original creators, brothers Rand and Robyn Miller (who are said to be working on a top-secret *Myst* project after milking the series with a string of spin-off novels and merchandise). "They told us where in the timeline and which characters we could use, and also what freedoms we had. There were certain time frames that we couldn't pursue, because they already had novel ideas for them." It took about three months to decide on the final ending and many ideas were discarded along the way. "That was definitely the hardest part of the project," he said. "For that particular one, we proposed three or four different solutions that were good enough to be in a game, but not as good as it could be — we knew it was about 80% of what it could be."

Uhler sent a design document to the game publisher to approve each month. "That was really the only thing that Ubi

Soft sent back," he said. "The ending is the last thing people will remember, so it needs to be one of the strongest points in the game." De Marle, the designers and Uhler worked to incorporate every detail of the story into a number of alternative endings. "All those different elements were practically impossible to bring together. We kind of knew what we wanted to happen, but we were never happy with how we accomplished that." With so many elements to deal with, they spent almost a year on design, and about 16 months in production. However, after settling on the story, the production process went smoothly. "We had never spent that much time on a design document before and it really paid off," he said.

After devoting so much time and energy to negotiating and improving the story, Uhler concentrated on using technology to make the story more than just a slideshow. Exile uses a new 'free look' technology that allows you to swing around 360° using a mouse. Uhler is obviously confident that the technology behind Exile can support the story. "Everything that we tried to do in Exile was directed to making the game more immersive and to make the right emotional impact."

Despite the massive improvement on the previous games, Uhler still feels that Exile could have been improved by better technology. The use of live action sequences limited

the number of interactions (the game already comes in four CD-ROMs and some people have found switching CDs annoying). He also wanted to be able to move the camera to simulate the player moving, and use high-definition TV. "You have to figure out ways to limit what they can do without making them feel that they are limited."

Gamers in the Myst

If Exile succeeds in cracking the mainstream, it could boost the role of the writer in gaming and lead to higher calibre games. "My experience of the gaming industry so far has been that a lot of people don't feel that the writer is very important. In many cases, there could be a greater role for the writer," De Marle said. "I personally feel that a writer can bring a lot to a project. Everything has a story, even a fighting game. The story needs to be reflected in the environment and in the art. Not a lot of writers are good at that."

She is interested in writing a *Myst* novel, as well as in being involved if there is another chapter in the *Myst* series. "I have always wanted to write stories, whether it's a novel or a screenplay or whatever. I think there are opportunities in the gaming industry, but not, I think, to the extent of *Myst*." Ironically, *Myst* sent the popularity of other adventure games plummeting by spawning a raft of poor-quality clones. "I'm curious to see whether there will be another opening there because of Exile." So far, no-one else has put themselves on the line and tried to break out of the established gaming mould with an interactive movie.

In gaming circles, Exile has received positive reviews, but for such a significant title, it has otherwise met with a lack of interest. The gaming industry has been happy enough to remain on the fringe of mainstream entertainment (with a few notable exceptions) and has shown little interest in following in the footsteps of De Marle and Uhler. "I think there is a completely untapped audience out there who want something like this," De Marle said. Whether the world will be convinced that Exile lives up to the claim of being a truly interactive movie will be revealed in time. ■



Achieve dot com success, explore the mind, escape with a thriller, and expand your repertoire of online jokes.

Dot com success

Underdogs in Overdrive

Many self-help business books come from the US and deal with US institutions, practices and cultural mores. In *Underdogs in Overdrive*, author Ilyas Khan provides advice based on the experience of Internet entrepreneurs in the Asian region. In case you're wondering, Khan's 'entrepreneur' is "someone who organises and manages any enterprise, especially one involving considerable risk", not a shonky operator as the word has come to imply.

The subtitle, *10 Insanely Great Ideas for the Asian Technopreneur*, reflects Khan's admiration for Apple Computers. Steve Jobs used 'insanely great' in 1983 to describe the soon-to-be-launched Macintosh, and it was later picked up by Steven Levy as the title of his book documenting the Mac's first decade. Kahn does actually refer to Apple as one of his "constant inspirations".

The ideas aren't original, nor do they claim to be. However, Kahn interprets them in a regional context, and provides anecdotes and exercises to support them. Some of these exercises are calls to action (giving to a charity, reading particular books), but others only need to be imagined to understand the point being made.

It's still too early to tell whether the principles Khan covers will underpin long-term success for the market. However, as Kahn and his partner Johnny Chan successfully floated their company, techpacific.com, despite last year's 'tech wreck', he's probably worth listening to.

Stephen Withers



Author Ilyas Khan
Publisher John Wiley and Sons
Contact John Wiley and Sons
Phone (02) 9805 1100
Price \$41.95
ISBN 0471479071
Rating ■■■■■■■■

States of Mind

The workings of the brain have attracted renewed public attention recently, and several books aimed at a general audience have appeared in response. This most recent addition is a collection of essays based on a series of public lectures by eight brain and mind specialists.

It presents contemporary understandings of the brain in an accessible way.

Some of the ideas are well-established and gel with our own experience, but the book doesn't always confirm accepted wisdom. For example, the Freudian notion that dreams are an expression of the unconscious mind is being challenged by researchers who now believe that dreams may be attempts by the cerebral cortex (which integrates memories and sensory inputs) to make sense of the spontaneous firing of neurons during sleep.

Given the brain's physical and chemical fragility, it seems amazing that any of us function as well as we do.

Stephen Withers



Author Roberta Conlan (ed)
Publisher John Wiley & Sons
Contact John Wiley & Sons
Phone (02) 9805 1100
Price \$39.95
ISBN 0471399736
Rating ■■■■■■■■

The Falls

This whodunit is another in the Rebus series. It is set in and around Edinburgh, and cleverly combines some gruesome Scottish history with an Internet role-playing game and the cut and thrust of internal police politics.

Rankin keeps you guessing about the identity of the culprit — the mysterious Quizmaster — as you follow the police investigation. The plot is a lot of fun, as is the tension created as Detective Inspector John Rebus and his assorted band of helpers pursue their quarry by using the Internet and any other means at their disposal.

A basic understanding of the Internet will deepen readers' understanding of finer details. Rankin also touches on some important issues about computer and Internet security.

This is an entertaining read, and as soon as you are introduced to the quirky main character, you'll find it difficult to put down.

John Bradbury



Author Ian Rankin
Publisher Orion Publishing Group
Contact Allen & Unwin
Phone (02) 8425 0100
Price \$27.95
ISBN 075283861X
Rating ■■■■■■■■

e-tales

"The best thing about email is the jokes it disseminates." So says Jeremy Paxman, eminent UK TV presenter and contributor to *e-tales: the best & worst of internet humour*. If you're an email junkie, you'll have heard plenty of these before — but they're still good for a laugh. This book is great as stress relief, and it's also a good resource



if you feel like initiating a humour trail rather than always being a forwarder.
 Lindsay Hayman

Author Various
Publisher Cassell (Ward Lock)
Contact Allen & Unwin
Phone (02) 8425 0100
Price \$14.95
ISBN 0304357278
Rating ■■■■■■■■

Best ever puzzle games

Macho gamers boast about how many tiny chunks they've just blown their latest opponent into, but puzzle gamers merely sigh and get on with the more important business of arranging blocks, then . . . blowing them into tiny chunks. APC takes a look at the best puzzle games of all time.

The Incredible Machine



Remember those cool, intricate traps in *The Goonies*, where a cannonball rolls through a track, hitting a lever that opens up a water sluice, which fills a bucket that tips over and so on, until the trapdoor opens under the Goonies' feet? The Incredible Machine is similar, with goals including getting a tennis ball into a bucket, opening a door, and shooting a rocket. It's a complete time waster, but amazingly addictive.



Bejeweled



Bejeweled is best described as Tetris in reverse. You start with a field of jewels, and have the ability to swap any two gems around. With each move, you must create a line of three or more gems, which then vanish, earning you points. Bejeweled's pace is slow and thoughtful, as it's imperative to plan ahead.

Being online and free, Bejeweled is also very dangerous. As you read this, certain APC staff members who shall remain nameless are no doubt risking their jobs playing it when they should be working.



Devil Dice



Puzzle games can be very addictive, but who can work out their plots? In Devil Dice, you play a small devil who must flip sides of dice on a chessboard to remove them. New dice constantly 'grow' from the floor and must be destroyed, otherwise you die. If frantic action is too much for you, the game also features a series of static dice puzzles to overcome. It's a lot of fun, but you have to know the sides of a die well to become proficient.



Puyo Puyo



The Puyo Puyo game has been released under just about every title on earth, from Puyo Puyo to the strangely appealing Dr Robotnik's Mean Bean Machine. A Tetris-style puzzler, it challenges you to arrange beans into groups, at which point they

disappear. Puyo Puyo starts off easy, and then gets blindingly fast. Before you know what's hit you, it's three in the morning, but you can't sleep until you finish just one more level.



Pipemania



Pipemania revolves around getting a viscous green ooze to flow through pipes. Arrange the pipe pieces in the right order and you score big. Fail, and you end up with ooze on your face. Pipemania is less frantic than many other puzzle games and requires a lot of planning so that you don't pipe yourself into a corner. Presumably, it is aimed at the lucrative plumbing gamer market, but its appeal extends to anyone who likes the combination of a mental challenge and a strict time limit.



Klax



Playing Klax is rather like playing Tetris with single coloured blocks and a tiny playing area. You must catch tiles on a paddle and drop them in sequence into a bin. Match the colours in threes or more, and you earn points to clear a wave. There are different challenges for each wave, from simple points to getting a certain number of diagonal-only matches. Klax is a lot of fun, but after a while you want to kill the stupid voice that says "Klax wave" monotonously at the start of each level.



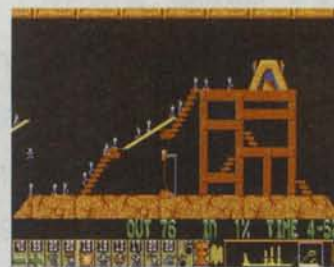
Bust a Move

Bust a Move is addictive — very, very addictive. One APC writer (we won't say who), has no fewer than five different versions of the game. Firing coloured bubbles into rows doesn't sound too hard, but the bubbles just keep coming, and only quick wits and a touch of luck will see your saurian friend rise triumphant. The two-player mode allows skillful players to humiliate their foes with a crushing tide of bubbles. Later versions of this bubble classic introduce new characters and combination bubbles, but no matter what version you play, you can expect to forget about food, family and even basic hygiene as you rack up score after score after score.



Lemmings

Originally released for the Amiga in 1991, Lemmings soon appeared on other systems, and spawned an insane number of sequels. The game mechanics are simple — you must prevent the lemmings from walking to their death over a number of perilous landscapes. Lemmings are so vapid that they just keep walking unless they bump into a wall and get turned around. Thus, they happily walk off cliffs and plummet to their deaths. To avert this, you must manipulate individual lemmings (make them build bridges or dig tunnels) to help them reach the level's exit. Higher levels are maddeningly hard, and will have you pulling out your hair trying to keep the little scamps alive.



Tetris

Many people blame poor economics for the fall of the Soviet empire. Here at APC, we know different. Tetris was originally conceived in 1985. The USSR fell within the space of four years. Coincidence? We think not! The game works by presenting you with a series of shapes that must be slotted together inside a box to form rows. Every time a row is formed, it disappears. If you can't form rows, the box fills up and you lose. This mind virus spread through Russian computer networks and caused such a colossal reduction in worker efficiency that the empire collapsed. In the West, it was hugely successful for Nintendo — it helped sell more copies of the Gameboy than any other game (except, perhaps, the dreaded Pokemon).



Marble Madness

In Marble Madness, you must guide a marble through different terrains to the level's exit, and you have a very tight time limit. The concept of sentient marbles is a tough one to swallow, but sentient marbles that avoid killer slime puddles, vacuum cleaners and the evil black marble?

There is no way the programmers were sober for this one. The original arcade version was great — it featured trackballs, so playing the game was like manipulating a giant marble. Home versions were a mixed bag; the Amiga, NES and Sega Megadrive versions were great, but the PC version was an absolute disgrace. Playing with marbles might make you feel like you're back at primary school, but this game's addictive nature cannot be overstated.



Potential masterminds

Pang



No One Can Stop Mr Domino!

Super Puzzle Fighter II Turbo



Gruntz

Krusty's Super Funhouse

Like a jigsaw with missing pieces



A Boy and His Blob

Every poor Tetris shareware clone

The Next Tetris

Tetrisphere

3D Lemmings



On the job

Looking to change your career? Perhaps you want to escape the nine-to-five grind for something more exciting. If so, check out these Web sites. You can search for jobs, overhaul your resume and practise your interview skills. Who knows – you might just discover your true vocation.



Australian Resume Server

Get in touch with employers in the fields of IT, engineering, technology sales and marketing, sciences, and office administration and management. If you place your resume on this site, prospective employers (screened to ensure that they are legitimate) can access it. The site lists a number of professional resume-writing companies



Online www.herenow.com.au

Rating 

for those who need a little help producing a polished CV. There's also a section offering up-to-date information on companies that provide professional training (mainly in software packages), and another which contains IT-related job vacancies.

Suzanne Fraser

Equal Opportunity in Public Employment

This site provides information on equal employment opportunity (EEO) legislation and practices in NSW. For those applying for work in the public sector, the site gives an overview of EEO and offers useful explanations of terms you might come across in selection criteria for government jobs (for example, do you



Online www.eeo.nsw.gov.au

Rating 

know what 'flexible work practices' means?). You can browse publications on topics such as mentoring, managing cultural diversity in the workplace, and women's employment.

Publications can be downloaded, or print copies can be ordered by email.

Suzanne Fraser

International Exchange Programs

International Exchange Programs (IEP) is a work and travel organisation that specialises in short-term exchange programs to the US, the UK, Europe and New Zealand in all types of vocations (but mostly in the field of hospitality). IEP also offers OPT USA — a work experience and internship program for the career hopeful.



Online www.iep-australia.com

Rating 

The site is purely functional and consists of clearly presented basic background information. For more information, visitors are asked to call a number or attend one of the many regular information nights held in the major Australian capital cities.

March Stepnik

McGraw-Hill Higher Education Career Resources

This section of publisher McGraw-Hill's broad educational Web site lists online resources for furthering your career. The section is split into three main categories. The first offers links to sites that provide self-assessment exercises. You can get an appraisal of your



Online www.mcgraw-hill.com.au/mhhe/career/homepage.htm

Rating 

personality type; your communication, problem-solving and leadership skills; and your general potential. The second links to six resume-building sites, including The Dixon Report, which contains great "super-quick electronic resume tips". The last is a list of local job search sites with vacancies here and overseas.

Lindsay Hayman

Monster.com

This site is not just a job search tool — and just as well. When APC searched for vacancies for a few common occupations, the results were underwhelming. Fortunately, the site does have some redeeming features. You can get expert advice on finding a job, managing your career, and how to break into a particular industry. If your resume looks a bit ho-hum, you



Online www.monster.com.au

Rating ■■■■■■■■

can go to the Resume Centre for help to style it up. You can also complete a number of quizzes to determine what skills you possess, and even take part in a virtual interview. The site also boasts 500,000 job vacancies around the world.

Gail Lipscombe

mycareer.com.au

If you want to find a job, update your resume or brush up your skills with extra training, try this site. You have to register to use its services, but it's free. The resume manager helps you construct a comprehensive CV that can be emailed out with job applications. If you're on the lookout for a certain type of job, you can also register your job profile. You'll be notified



Online www.mycareer.com.au

Rating ■■■■■■■■

when any job that suits your criteria comes in. If you apply for a lot of jobs, you can maintain a personal job folder to keep track of them all. News articles on training courses and directions in employment are also available to browse through.

Suzanne Fraser

Navy Jobs

This site attempts to present a hip, exciting front for military recruitment, and in some ways it succeeds. It's not just your boring old 'Do it for your country' recruitment propaganda. The design is funky and the site addresses some important questions people might have about the Navy. There is an amusing section



Online www.navyjobs.defence.gov.au

Rating ■■■■■■■■

in which some common myths are debunked, and you'll find a clear description of the various jobs you can apply for in the Navy. For instance, did you know that you can join the Navy as a musician, get paid tax-free for it, and also keep your civilian job?

Megan Smith

New Apprenticeships

The New Apprenticeships scheme is a Commonwealth youth employment initiative. The scheme covers more than 500 occupations over a huge range of industries. You can follow the link to the Australian Job Search site for detailed information to help you choose the career that's right for you. The scheme combines



Online naap.detya.gov.au

Rating ■■■■■■■■

practical work with study and training, and offers incentives to business to employ young people over the age of 15. You can even become part of New Apprenticeships while still at school. Qualifications achieved through participation in the scheme are recognised nationally.

Gail Lipscombe

Royal Military College

The style and content of this site closely resembles traditional recruitment propaganda. It covers everything you could possibly want to know about living and learning on the Duntroon campus, including a virtual tour of the living quarters. There is also a lot of information about the Australian military in general, and about



Online www.rmc.edu.au

Rating ■■■■■■■■

what you can do after graduation. It provides for people who are interested in both part-time and full-time training. A photo gallery and a history of the college are also included. This is a very useful resource for anyone interested in a career in the military.

Megan Smith

So You Wanna Join the Circus?

Kids, forget about those boring jobs your parents have lined up for you. Dads, here's a creative solution to that midlife crisis. Let's face it: anyone with a calculator can be an accountant. How many people have the moxie to be a tightrope walker? This site



Online www.soyouwanna.com/site/syws/circus/circus.html#para1

Rating ■■■■■■■■

fills you in on circus life and on how to pick and perfect your circus talent. Unfortunately, all the circus schools listed are in the US. If all else fails, and your circus career is stymied by the slight problem of having no talent, all those animals mean there are always openings for poopier scoopers.

Gail Lipscombe

Microstuffed

Ah, the delights of Photoshop. Never before has one program allowed so many people to indulge in so much digital mischief. Over five years ago, Steve Kremer set up his JokeWallpaper Web site and started posting wallpaper, startup screens and other visual hijinks. This month, APC is pleased to present three of his latest creations.

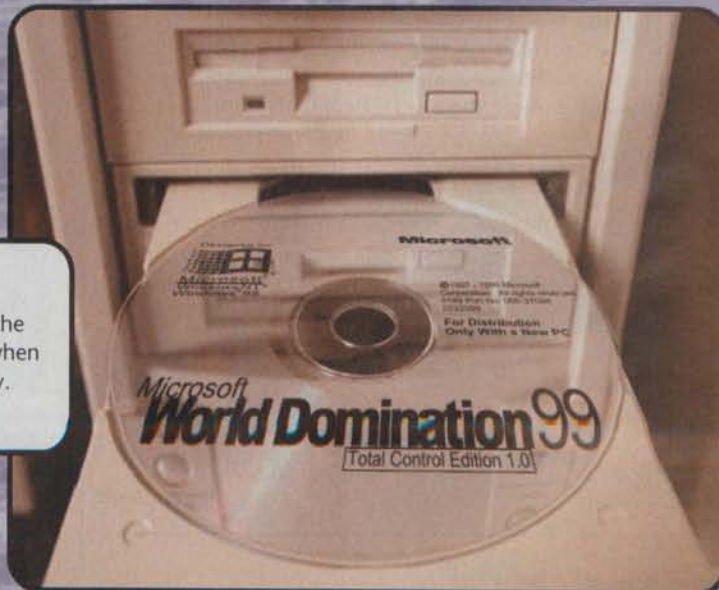
BILL GATES IS GEEKIATOR



Curse you, Linux Maximus!

First up is Bill Gates, starring in the new Ridley Scott epic *Geekiator*. Visitors to the JokeWallpaper site have suggested alternative captions to the one in this snap; our favourite is 'Error occurred on sword. Blade may become unstable. Reboot sword.'

One of Kremer's spies snapped this never-before-seen Microsoft product on a visit to Redmond. Apparently, the program's development was halted in the beta stage when that whole bothersome monopoly thing got in the way.



inhell.



1.666 Ghz
"A devilishly fast CPU!!"

Pentagram Pro[®]
Processor

Last month, APC tested the ultrafast 1.7GHz Pentium 4. You'd expect it to be AMD that's snapping at its heels, but instead, there's a new player in the processor market, Inhell, with a devilishly fast 1.666GHz Pentagram chip. It's processed to work best on a full moon, and a sacrificial goat is recommended.

APC readers can download any of these wallpaper images for free until the end of July from www.jokewallpaper.com/apc. You can also jump into the main site and, for \$US2 (payable through Amazon's Honour Pay Page or the PayPal service), feast on the full collection of original wallpaper, startup screens and email postcards.

JULY ISSUE ON SALE NOW!



PC USER AUSTRALIAN

CHECK OUT THE
NEW net living
FEATURES: and Enterprise



First hands-on
guide to

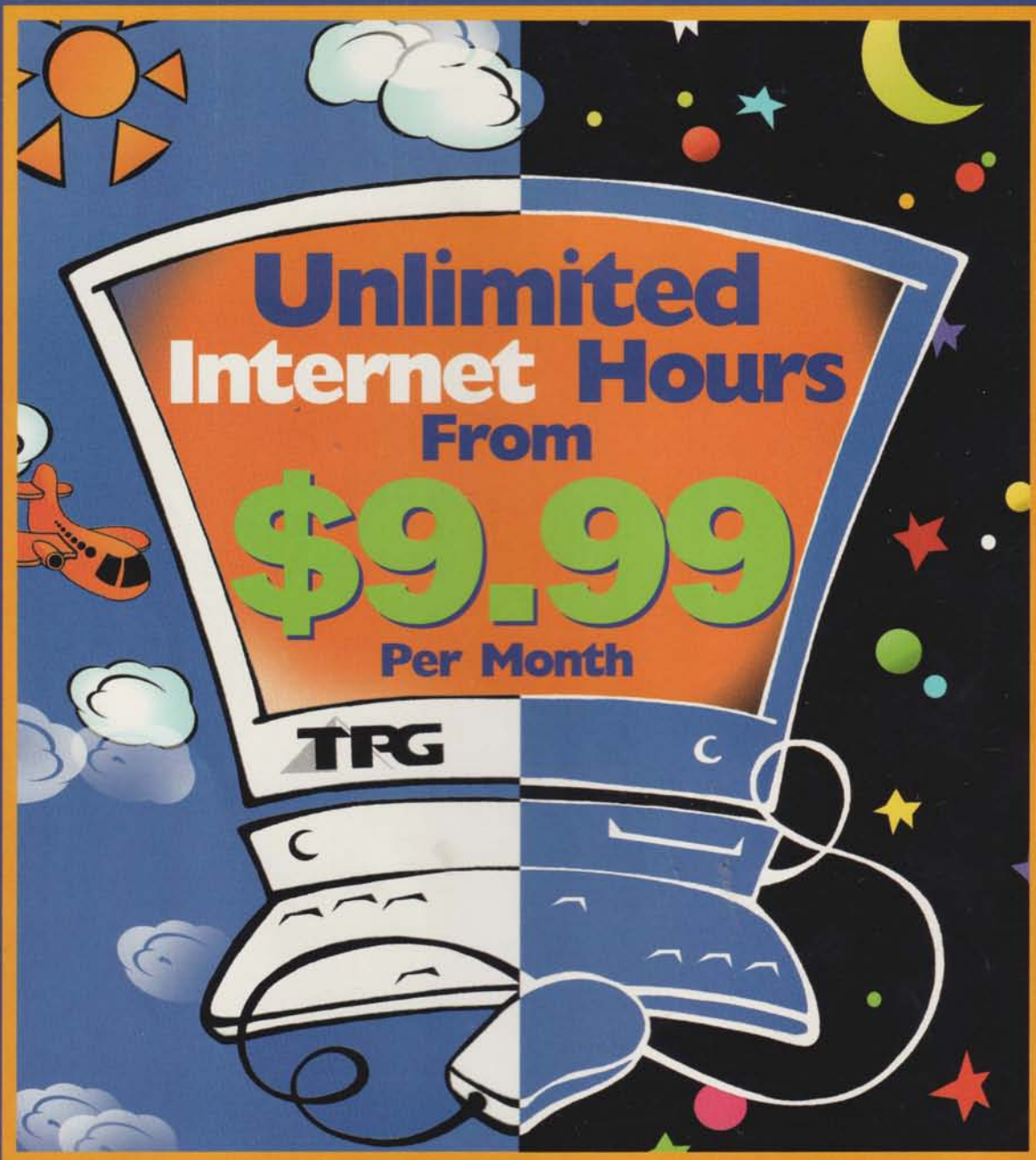
Microsoft
Office xp

Palmtop
shoot-out

help station

on the Web: www.pcuser.com.au

PLUS DOMAIN NAME HOSTING WEB SITE HOSTING PERMANENT CONNECTIONS BOOMERANGTV E-MAIL ONLY



Internet Anytime

- free e-mail account
- free 10Mb website space
- no admin fees
- 101 national locations
- dealer enquiries welcome



CALL 1300 360 855
OR VISIT www.tpg.com.au

Offer available in Sydney, Albury, Armidale, Bathurst, Coffs Harbour, Cowra, Dubbo, Gosford, Goulburn, Grafton, Kiama/Wollongong, Lake Macquarie/Newcastle, Nowra, Penrith, Port Macquarie, Tamworth, Wagga, Melbourne, Ballarat, Bendigo, Geelong, Lilydale, Mornington, Morwell, Sale, Shepparton, Warragul, Warrnambool, Brisbane, Atherton, Bundaberg, Noosa Heads, Southport, Gold Coast, Toowoomba, Canberra, Adelaide, Perth, Bunbury. Valid credit card required; Unlimited 5 hr sessions; Paid quarterly in advance; FREE 100Mb download per mth; Excess download charged at 18c/Mb, capped at \$14.96 per mth • Conditions Apply • Excludes phone connection charges • Local call charge check with Telstra on 12552 •